



AGENDA

RETIREMENT BOARD MEETING

REGULAR MEETING

August 11, 2021, 9:00 a.m.

The Board of Retirement will hold its meeting via teleconferencing as permitted by Executive Order N-29-20. The meeting is accessible telephonically at 669-900-6833, Webinar ID: 848 6538 2371, Passcode: 539395, or via the web at:

<https://us06web.zoom.us/j/84865382371?pwd=ZHJlQ2tzUUZGSUdUQkF5NG8wNzNLUT09>

Passcode: 539395

Persons may request to make public comment by emailing publiccomment@cccera.org the day before the Board meeting or the day of the Board meeting either before or during the meeting. Public comments are limited to any item that is within the subject matter jurisdiction of the Board of Retirement. Both written and oral comments will be accepted, subject to a three-minute time limit per speaker. Written comments will be read into the record at the meeting. All comments submitted will be included in the record of the meeting.

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.
2. Recognition of Jennifer Love for 20 years of service and Brittany Revuelta-Ozuna for 5 years of service.
3. Roll Call.
4. Accept comments from the public.
5. Approve minutes from the June 23, 2021 meeting.
6. Routine items for August 11, 2021.
 - a. Approve certifications of membership.
 - b. Approve service and disability allowances.
 - c. Accept disability applications and authorize subpoenas as required.
 - d. Approve death benefits.
 - e. Accept travel report.

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

- f. Accept asset allocation report.
 - g. Accept liquidity report.
- 7. Presentation from Segal regarding the December 31, 2020 Valuation Report.
- 8. Consider and take possible action to adopt the December 31, 2020 Valuation Report and contribution rates for the period July 1, 2022—June 30, 2023.
- 9. Consider authorizing the attendance of Board:
 - a. SACRS Summer Webinar Series, August 12 & August 24, 2021, Webinar.
 - b. Trustees Masters Program, IFEBP, October 16-17, 2021, Denver, CO.
 - c. 8th Annual California Institutional Forum, December 17, 2021, Napa, CA.
- 10. Miscellaneous
 - a. Staff Report
 - b. Outside Professionals' Report
 - c. Trustees' comments

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.



RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING

June 23, 2021

9:00 a.m.

The Board of Retirement meeting was accessible telephonically at (669) 900-6833, Webinar ID: 950 8516 8586, Passcode: 877519 due to the Contra Costa County and State of California Coronavirus (COVID-19) Shelter In Place Orders, and as permitted by Executive Order N-29-20 issued on March 17, 2020.

1. Pledge of Allegiance

The Board and staff joined in the *Pledge of Allegiance*.

2. Roll Call

Present: Candace Andersen, Donald Finley, Scott Gordon, Jerry Holcombe, Louie Kroll, Jay Kwon, David MacDonald, John Phillips, Reggie Powell, Mike Sloan and Russell Watts

Absent: None

Staff: Gail Strohl, Chief Executive Officer; Christina Dunn, Deputy Chief Executive Officer; Timothy Price, Chief Investment Officer; Wrally Dutkiewicz, Compliance Officer; Anne Sommers, Administrative/HR Manager; Henry Gudino, Accounting Manager; and Jasmine Lee, Member Services Manager

Outside Professional Support: Representing:

Andrew Paulden	Brown Armstrong
Brooke Baird	Brown Armstrong

3. Accept comments from the public

No member of the public offered comment.

4. Approve minutes from the May 26, 2021 meeting

It was **M/S/C** to approve the minutes from the May 26, 2021 meeting. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Powell and Watts)

5. **Presentation from Brown Armstrong on the audit of the December 31, 2020 financial statements** – Andrew Paulden and Brooke Baird

Paulden and Baird presented the audit of the December 31, 2020 financial statements and were pleased to report there were no internal control weaknesses and they have issued an unmodified opinion, which is the highest opinion.

6. **Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS**

It was **M/S/C** to authorize the CEO to renew a maintenance and support agreement with CPAS. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Powell and Watts)

7. **Consider and take possible action to cancel the meeting on July 28, 2021**

It was **M/S/C** to cancel the meeting on July 28, 2021. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Powell and Watts)

8. **Report from Audit Committee Chair on June 9, 2021 Audit Committee meeting**

Phillips reported on the June 9, 2021 Audit Committee meeting.

9. **Consider authorizing the attendance of Board:**

a. It was **M/S/C** to authorize the attendance of 1 Board member at the 2021 NASRA Annual Conference, August 4-11, 2021, Virtual Program. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Powell and Watts)

b. It was **M/S/C** to authorize the attendance of 4 Board members at the 2021 Invesco Real Estate Global Client Conference, November 2-4, 2021, San Diego, CA. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Powell and Watts)

10. **Miscellaneous**

a. Staff Report –

Strohl reported we will be transitioning additional staff back into the office in the latter part of July; and, we will begin in-person member appointments and expand our phone line hours at the end of July.

b. Outside Professionals' Report -

None

c. Trustees' comments –

Andersen reported the Board of Supervisor's will be going back to in-person meetings on the second Tuesday in September and will also be looking into incorporating Zoom technology for their meetings. She noted she hopes CCCERA will do the same.

Holcombe reported there was a very thoughtful and positive article on the Claycord.com website on a new application called Tablet Command for first responders, noting this is one of Will Pigeon's applications. He wished him well and congratulated him on the success of the application noting it is meant to save first responders lives.

MacDonald provided information on the SACRS Fall Conference which will be held in November. He asked if anyone knows of any retirees that wouldn't mind having their picture taken and giving a brief comment (i.e., a thank you to CCCERA and SACRS for helping to secure their pension) to please let him know.

It was **M/S/C** to adjourn the meeting. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Powell and Watts)

Scott Gordon, Chairman

Jerry Holcombe, Secretary

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

Meeting Date
08/11/2021
Agenda Item
#6

BOARD OF RETIREMENT

Page 1

August 11, 2021

Items requiring Board Action

A. Certifications of Membership – see list and classification forms.

B. Service and Disability Retirement Allowances:

<u>Name</u>	<u>Number</u>	<u>Effective Date</u>	<u>Option Type</u>	<u>Tier</u>	<u>Selected</u>
Binaday, Ubaldo	62390	03/30/21	SR	Tier II and III	Unmodified
Black, Jeanette	74859	03/30/21	SR	Tier III	Unmodified
Cline, Patricia	45087	03/31/21	SR	Tier III	Unmodified
Cox, Laura	38200	03/31/21	SR	Tier II and III	Unmodified
Currier, Sheila	D3301	03/27/21	SR	Tier II and III	Unmodified
Dawson, Tessa	67265	03/31/21	SR	Tier III	Unmodified
DeMichiel, Christine	71879	03/30/21	SR	Tier III	Unmodified
Desoer, Craig	52124	03/31/21	SR	Tier III	Unmodified
Dixon, Wayne	67685	03/30/21	SR	Tier II and III	Unmodified
Duazo, Maria	49263	03/31/21	SR	Safety A	Unmodified
Emigh, Kevin	44766	03/31/21	SR	Tier III	Unmodified
Espanol, Maria	56792	03/31/21	SR	Tier III	Unmodified
Ferlise, Kimberly	68692	03/30/21	SR	Tier III	Unmodified
Fernandez, Nancy	63761	03/31/21	SR	Tier I	Unmodified
Flores, Martha	53775	03/31/21	SR	Tier II and III	Unmodified
Franchi, Anthony	54321	03/31/21	SR	Safety A	Unmodified
Francisco, Gervao	D9500	03/31/21	SR	PEPRA 5.3	Unmodified
Ghanadan, Soheila	49790	03/31/21	SR	Tier II and III	Unmodified
Ghiya, Kalpana	45233	03/31/21	SR	Tier III	Unmodified
Gill, Ellen	82751	03/31/21	SR	PEPRA 5.2	Unmodified
Gonzales, Lisa	72815	03/31/21	SR	Tier III	Unmodified
Gosling, Pamela	37107	03/31/21	SR	Tier II and III	Unmodified
Greer, Kimberley	D3406	02/26/21	SR	Tier I	Unmodified
Halle, Mary	49852	03/31/21	SR	Tier II and III	Unmodified

Option Type

NSP = Non-Specified
 SCD = Service Connected Disability
 SR = Service Retirement
 NSCD = Non-Service Connected Disability
 * = County Advance
 Selected w/option

Tier

I = Tier I
 II = Tier II
 III = Tier III
 S/A = Safety Tier A
 S/C = Safety Tier C
 Pepra 4.2 = Pepra Tier 4 (2% COLA)
 Pepra 4.3 = Pepra Tier 4 (3% COLA)
 Pepra 5.2 = Pepra Tier 5 (2% COLA)
 Pepra 5.3 = Pepra Tier 5 (3% COLA)
 S/D = Pepra Safety Tier D
 S/E = Pepra Safety Tier E

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Page 2

August 11, 2021

Hernandez, Carmencita	45791	03/31/21	SR	Tier II and III	Unmodified
Howard, Phyllis	43692	03/31/21	SR	Tier III	Unmodified
Hung-Fan, Melody	44169	03/31/21	SR	Tier II and III	Unmodified
Huntze, James	44105	03/31/21	SR	Safety A	Unmodified
Jones, Yolanda	44187	03/31/21	SR	Tier I	Unmodified
Kocher, Robert	63872	03/31/21	SR	Tier III	Unmodified
Lejano, Minda	43851	03/31/21	SR	Tier II and III	Unmodified
Loor, Chungpei	46796	03/31/21	SR	Tier II and III	Unmodified
Macedo, Joseph	65889	03/30/21	SR	Tier II and III	Unmodified
Mayo, Sue	D9500	03/31/21	SR	Tier III	Unmodified
McDaniel, Robert	56089	03/21/21	SR	Safety A	Unmodified
Miramontes, Guadalupe	63467	03/16/21	SR	Tier II and III	Unmodified
Miyashiro, Marc	67026	03/31/21	SR	PEPRA 5.3	Unmodified
Mohay, Cheri	70242	03/30/21	SR	Tier III	Unmodified
Morales, Brian	D7830	03/23/21	SR	Safety A	Unmodified
Murphy, Kathleen	48169	03/31/21	SR	Tier II and III	Unmodified
Ojala, Craig	78100	03/21/21	SR	Safety D	Unmodified
O'Mary, Marion	48573	03/31/21	SR	Safety A	Unmodified
Perez, Suzanne	46135	03/30/21	SR	Tier II and III	Unmodified
Posada, Jimmy	81878	03/20/21	SR	Safety E	Option 2
Preston, Conswella	74333	03/31/21	SR	Tier III	Unmodified
Quichocho, Frederick	70630	03/31/21	SR	Safety A	Unmodified
Quintero, Aurelia	47731	03/31/21	SR	Tier II and III	Unmodified
Rahmani, Farideh	56152	03/13/21	SR	Tier II and III	Unmodified
Reese, Shirley	55017	03/31/21	SR	Tier II and III	Option 1
Reese, Tish	D9500	03/31/21	SR	Tier III	Unmodified
Rezwani, Shahla	44708	02/08/18	SCD	Tier II and III	Unmodified
Rodriguez-Ziemer, Michelle	75949	03/01/21	SR	Tier III	Option 1
Schleupner, Christopher	69428	03/31/21	SR	Tier III	Option 2
Schumann, Susan	67526	03/31/21	SR	Tier III	Unmodified

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CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Page 3

August 11, 2021

Scott, William	D7160	03/30/21	SR	Safety A	Unmodified
Servantes-Huie, Marie	39581	03/31/21	SR	Tier II and III	Unmodified
Sinz, Monica	44116	03/31/21	SR	Tier III	Unmodified
Skerritt, Victoria	71885	03/31/21	SR	Tier III	Unmodified
Sloan, Sharon	60333	03/25/21	SR	Tier I	Option 2
Spani, Bruno	D7830	03/30/21	SR	Safety A	Unmodified
Strohmeier, Victor	60704	03/30/21	SR	Safety A	Unmodified
Taflya, Aleksandr	60187	03/31/21	SR	Safety A	Unmodified
Tourte, Jerrold	39381	03/26/21	SR	Tier II and III	Unmodified
Vo, Tue Tan	56005	10/01/20	SR	Tier II and III	Option 4
Waters, Chuck	53368	03/30/21	SR	Tier II and III	Unmodified
Wedemeyer, Daniel	52040	03/31/21	SR	Safety A	Unmodified
Westermann, Kenneth	60624	03/31/21	SR	Safety A	Unmodified
Williams, Mickey	63006	03/31/21	SR	Tier II and III	Option 1
Woofter, Lydia	66762	03/31/21	SR	Tier I	Option 2
Young, Benedicta	D9500	03/31/21	SR	Tier I and II	Unmodified

C. Disability Retirement Applications: The Board's Hearing Officer is hereby authorized to issue subpoenas in the following cases involving disability applications:

<u>Name</u>	<u>Number</u>	<u>Filed</u>	<u>Type</u>
Marchitiello, Nancy	65779	06/25/21	NSCD

D. Deaths:

<u>Name</u>	<u>Death</u>	<u>Employer as of Date of Death</u>
Alcaraz, Concepcion	06/21/21	Contra Costa County
Becker, Merle	07/20/20	Contra Costa County
Conry, Deanna	05/23/21	Superior Court of California County of Contra Costa
Farley, Colleen	06/02/21	Contra Costa County
Fuerst, Robert	07/05/21	Consolidated Fire Protection District

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CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Page 4

August 11, 2021

James, Kenneth	07/07/21	Contra Costa County
Knowles, Eunice	06/19/21	Contra Costa County
La Fortune, Steven	04/12/21	Contra Costa County
Markert, Donald	07/08/21	Kensington Fire Protection District
Methfessel, Katherine	06/16/21	Contra Costa County
Pangilla, Ronald	07/01/21	Contra Costa County
Potts, Kenneth	04/22/21	Contra Costa Couty Housing Authority
Rainey, Richard	07/04/21	Contra Costa County
Rush, Helen	06/27/21	Superior Court of California County of Contra Costa
Salumbides, Aida	06/30/21	Contra Costa County
Snider, Charlotte	07/23/21	Contra Costa County
Theobald, Gary	07/16/21	Contra Costa County
Wyrick, Charles	07/23/21	Superior Court of California County of Contra Costa

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S/E = Pepra Safety Tier E

CERTIFICATION OF MEMBERSHIPS

Name	Employee Number	Tier	Membership Date	Employer
Andrade, Olivia	90703	P5.2	06/01/21	Contra Costa County
Banda, Alma	D9500	P5.3	06/01/21	Contra Costa County Superior Courts
Barela, Robert	90683	P5.2	06/01/21	Contra Costa County
Beach, Julie	90679	P5.2	06/01/21	Contra Costa County
Bunag, Frederick	74636	P5.2	06/01/21	Contra Costa County
Burciaga, Marco	D3406	P4.3	04/01/21	Central Contra Costa Sanitary District
Burgess, Rhawtrenia	66682	III	06/01/21	Contra Costa County
Calder, Maria	D9500	P5.3	06/01/21	Contra Costa County Superior Courts
Candel, Lawrence	90634	P5.2	06/01/21	Contra Costa County
Cheatham, Steven	88534	S/E	06/01/21	Contra Costa County
Cole, Arielle	90716	P5.2	06/01/21	Contra Costa County
Cole, Kyla	90672	P5.2	06/01/21	Contra Costa County
Cruz, Anelica	90678	P5.2	06/01/21	Contra Costa County
Dark, Erich	90608	P4.2	06/01/21	Contra Costa County Fire Protection District
de Bonneville, Jeremy	D3406	I	02/01/21	Central Contra Costa Sanitary District
Denton-Shelton, Auriel	D9990	P4.3	06/01/21	Contra Costa County Housing Authority
Domingo, Manette	90715	P5.2	06/01/21	Contra Costa County
Espinosa-Rivas, Beatriz	86900	P5.2	06/01/21	Contra Costa County
Forrest-Vance, Noelle	D4980	P4.3	06/01/21	Contra Costa County Employees' Retirement Association
Franklin, Lisa	D7274	I	06/01/21	Moraga-Orinda Fire Protection District
Fung, Sharon	89885	P5.2	06/01/21	Contra Costa County
Gill, Ravneet	90612	P5.2	06/01/21	Contra Costa County
Gonzales, Eva	90689	P5.2	06/01/21	Contra Costa County
Gradilla, Jose	90604	P5.2	06/01/21	Contra Costa County
Guillory, Patrice	90591	P5.2	06/01/21	Contra Costa County
Hanson, Rachel	89884	P5.2	06/01/21	Contra Costa County
Hinton, Legaci	89538	P5.2	06/01/21	Contra Costa County
Horace, Matilda	D9990	P4.3	06/01/21	Contra Costa County Housing Authority
Ibaldez, Marivic	90603	P5.2	06/01/21	Contra Costa County
Johnson Villalobos, Livier	90513	P5.2	06/01/21	Contra Costa County
Johnson, Benjamin	D3406	P4.3	04/01/21	Central Contra Costa Sanitary District
Jones, Brianna	90622	P5.2	06/01/21	Contra Costa County
Karr, Edmund	90687	P5.2	06/01/21	Contra Costa County
Kaur, Iqbaljit	90697	P5.2	06/01/21	Contra Costa County
Kazimoto, Rithalorine	90592	P5.2	06/01/21	Contra Costa County
Kekuewa, David	88036	P5.2	06/01/21	Contra Costa County
Khansouvong, Somphou	78411	P5.2	06/01/21	Contra Costa County
Lavere, Mary Ann	85173	P5.2	06/01/21	Contra Costa County
Lolham, Ivet	90235	P5.2	06/01/21	Contra Costa County
Lopez, Angela	90665	P5.2	06/01/21	Contra Costa County

Key:

I = Tier I	P4.2 = PEPRA Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPRA Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPRA Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPRA Tier 5 (3% COLA)	S/E = Safety Tier E

CERTIFICATION OF MEMBERSHIPS

Name	Employee Number	Tier	Membership Date	Employer
Macauley, Tigest	90718	P5.2	06/01/21	Contra Costa County
Mallare, Patrick John	87294	P5.2	06/01/21	Contra Costa County
Marin, Michelle	90637	P5.2	06/01/21	Contra Costa County
McCarthy, Alexandra	90630	P5.2	06/01/21	Contra Costa County
Meyers, Annamarie	90582	P5.2	06/01/21	Contra Costa County
Moran, Georgia	88505	P5.2	06/01/21	Contra Costa County
Perez, Evelyn	D9500	P5.3	06/01/21	Contra Costa County Superior Courts
Periasamy, Yogalakshmi	90656	P5.2	06/01/21	Contra Costa County
Pieters, Sarah	90641	P5.2	06/01/21	Contra Costa County
Ramirez, Nicolas	82758	S/C	06/01/21	Contra Costa County
Ransom, Adryan	90590	P5.2	06/01/21	Contra Costa County
Roman, Veronica	84776	P5.2	06/01/21	Contra Costa County
Sanchez, Araceli	D9990	P4.3	06/01/21	Contra Costa County Housing Authority
Sargent, Phillip	83582	P5.2	06/01/21	Contra Costa County
Sinclair, Sean	90650	P4.2	06/01/21	Contra Costa County Fire Protection District
Singh, Amandeep	88560	P5.2	06/01/21	Contra Costa County
Singh, Sukhwinder	87442	P5.2	06/01/21	Contra Costa County
Sobhan, Farhana	88550	P5.2	06/01/21	Contra Costa County
Soriano, Beverly	90526	P5.2	06/01/21	Contra Costa County
Thoene, Timothy	90638	P5.2	06/01/21	Contra Costa County
Tolbert, Margaret	90643	P5.2	06/01/21	Contra Costa County
Torres, David	90688	P5.2	06/01/21	Contra Costa County
Vasquez, Janell	90655	P5.2	06/01/21	Contra Costa County
Velazquez Ramos, Genesis	90691	P5.2	06/01/21	Contra Costa County
Vizcarra, Anthony	90640	P5.2	06/01/21	Contra Costa County
Young, Cora	90733	P5.2	06/01/21	Contra Costa County

Key:

I = Tier I	P4.2 = PEPRA Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPRA Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPRA Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPRA Tier 5 (3% COLA)	S/E = Safety Tier E

**CCCERA Board of Trustees
Training & Educational Conference Expenses Paid During
Quarter 2 - 2021 (April to June)**

Trustee:	Conference Name/Purpose:	Location:	Event Dates:	Total
Candace Andersen	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
	SACRS/UC Berkeley Program-PREPAID	Webinar	July 13-22, 2021	500.00
Donald Finley	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
Scott Gordon	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
Jerry Holcombe	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
Louie Kroll	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
Jay Kwon	CALAPRS Trustees' Roundtable	Virtual	May 10, 2021	50.00
	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
David J. MacDonald	CALAPRS General Assembly	Virtual	March 8-9, 2021	250.00
	CALAPRS Trustees' Roundtable	Virtual	May 10, 2021	50.00
	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
	SACRS/UC Berkeley Program-PREPAID	Webinar	July 13-22, 2021	500.00
John Phillips	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
Reggie Powell	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
	SACRS/UC Berkeley Program-PREPAID	Webinar	July 13-22, 2021	500.00
Mike Sloan	CALAPRS General Assembly	Virtual	March 8-9, 2021	250.00
	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00
	SACRS/UC Berkeley Program-PREPAID	Webinar	July 13-22, 2021	500.00
Russell V. Watts	CALAPRS General Assembly	Virtual	March 8-9, 2021	250.00
	CALAPRS Trustees' Roundtable	Virtual	May 10, 2021	50.00
	SACRS 2021 Spring Conference	Virtual	May 11-14, 2021	120.00

**Contra Costa County Employees' Retirement Association
Asset Allocation as of June 30, 2021**

**Meeting Date
08/11/2021
Agenda Item
#6**

	Market Value	Percentage of Total Fund	Current Target* Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Sit	594,126,829	5.4%	7.0%	-1.6%		
Dimensional Fund Advisors	336,944,335	3.1%	4.0%	-0.9%		
Insight	904,613,359	8.3%	7.0%	1.3%		
Total Liquidity	1,835,684,523	16.8%	18.0%	-1.2%	17.0%	-0.2%
		Range 11-22%				
Growth						
Domestic Equity						
Boston Partners	285,165,250	2.6%	4.0%	-1.4%		
Jackson Square	264,001,184	2.4%	4.0%	-1.6%		
BlackRock Index Fund	464,332,442	4.3%	5.0%	-0.7%		
Emerald Advisors	207,742,200	1.9%	1.5%	0.4%		
Ceredex	194,917,276	1.8%	1.5%	0.3%		
Total Domestic Equity	1,416,158,352	13.0%	16.0%	-3.0%	13.0%	-0.0%
Global & International Equity						
Pyrford (BMO)	543,778,595	5.0%	4.0%	1.0%		
William Blair	680,467,338	6.2%	4.0%	2.2%		
First Eagle	536,041,871	4.9%	4.5%	0.4%		
Artisan Global Opportunities	640,627,497	5.9%	4.5%	1.4%		
PIMCO/RAE Emerging Markets	452,804,767	4.2%	4.0%	0.2%		
TT Emerging Markets	501,723,473	4.6%	4.0%	0.6%		
Total Global & International Equity	3,355,443,540	30.8%	25.0%	5.8%	19.0%	11.8%
Private Equity**						
Private Credit	1,164,421,354	10.7%	11.0%	-0.3%	18.0%	-7.3%
Real Estate - Value Add	742,200,811	6.8%	8.0%	-1.2%	13.0%	-6.2%
Real Estate - Opportunistic & Distress	195,267,731	1.8%	4.0%	-2.2%	5.0%	-3.2%
Real Estate - REIT (Adelante)	410,439,586	3.8%	4.0%	-0.2%	5.0%	-1.2%
High Yield (Allianz)	94,679,965	0.9%	2.0%	-1.1%	0.0%	0.9%
Risk Parity	180,898,374	1.7%	2.0%	-0.3%	0.0%	1.7%
AQR GRP EL	266,994,077	2.4%	3.0%	1.9%	3.0%	1.9%
PanAgora	267,328,148	2.5%				
Total Other Growth Assets	3,322,230,047	30.4%	34.0%	-3.6%	44.0%	-13.6%
Total Growth Assets	8,093,831,939	74.2%	75.0%	-0.8%	76.0%	-1.8%
		Range 65-85%				
Risk Diversifying						
AFL-CIO	265,342,298	2.4%	2.5%	-0.1%	2.5%	-0.1%
Parametric Defensive Equity	113,593,978	1.0%	1.5%	-0.5%	1.5%	-0.5%
Acadian MAARS	129,199,255	1.2%	1.5%	-0.3%	1.5%	-0.3%
Sit LLCAR	155,732,453	1.4%	1.5%		1.5%	
Wellington Real Total Return	168,040	0.0%	0.0%			
Total Risk Diversifying	664,036,024	6.1%	7.0%	-0.9%	7.0%	-0.9%
		Range 0% - 10%				
Cash and Overlay						
Overlay (Parametric)	151,969,462	1.4%		1.4%		
Cash	165,372,809	1.5%		1.5%		
Total Cash and Overlay	317,342,271	2.9%	0.0%	2.9%	0.0%	2.9%
Total Fund	10,910,894,757	100%	100%		100%	

*Current targets and ranges reflect asset allocation targets accepted by the Board on April 28, 2021 (BOR Resolution 2021-4).

**Private Equity long-term target includes Real Assets/Infrastructure (see Asset Allocation Mix 5 adopted December 9, 2020).

**Private Market Investments
As of June 30, 2021**

REAL ESTATE - Value Add

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Invesco IREF III	08/01/13	08/01/20				35,000,000	162,975	0.00%	
Invesco IREF IV	12/01/14	12/01/21				35,000,000	15,672,044	0.14%	4,453,599
Invesco IREF V	09/11/18	09/11/25				75,000,000	58,675,782	0.54%	21,256,455
Long Wharf FREG IV	08/14/13	09/30/21				25,000,000	1,707,769	0.02%	
Long Wharf FREG V	10/31/16	09/30/24				50,000,000	33,450,873	0.31%	
Long Wharf LREP VI	02/05/20	02/05/28				50,000,000	12,041,880	0.11%	33,723,223
LaSalle Income & Growth Fund VI	01/31/12	01/31/19				75,000,000	19,555,813	0.18%	3,946,000
LaSalle Income & Growth Fund VII	10/31/16	09/30/24				75,000,000	54,000,595	0.49%	8,502,404
						630,000,000	195,267,731	1.79%	71,881,682
Outstanding Commitments							71,881,682		
Total							267,149,413		

REAL ESTATE -Opportunistic & Distressed

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
DLJ Real Estate Capital Partners, L.P. III	06/30/05	06/30/14	in full liq.			75,000,000	16,214,995	0.15%	4,031,338
DLJ Real Estate Capital Partners, L.P. IV	12/31/07	09/30/18				100,000,000	56,820,300	0.52%	1,876,084
DLJ Real Estate Capital Partners, L.P. V	07/31/13	12/31/22				75,000,000	61,868,932	0.57%	5,200,784
DLJ Real Estate Capital Partners, L.P. VI	02/28/19	01/31/29				50,000,000	27,159,803	0.25%	25,050,462
Oaktree Real Estate Opportunities Fund V	02/01/11	02/01/21				50,000,000	3,009,870	0.03%	25,750,000
Oaktree Real Estate Opportunities Fund VI	09/30/13	09/30/20				80,000,000	27,929,114	0.26%	18,400,000
Oaktree Real Estate Opportunities Fund VII	02/28/15	02/28/23				65,000,000	39,589,608	0.36%	16,120,000
Siguler Guff Distressed Real Estate Opp. Fund	07/30/11	07/30/22				75,000,000	22,278,373	0.20%	5,625,000
Siguler Guff Distressed Real Estate Opp. Fund II	08/31/13	08/31/25				70,000,000	44,056,800	0.40%	8,015,000
Siguler Guff Distressed Real Estate Opp. II Co-Inv	01/31/16	10/31/25				25,000,000	16,044,153	0.15%	4,462,138
Paulson Real Estate Fund II	11/10/13	11/10/20				20,000,000	22,339,026	0.20%	654,377
Angelo Gordon Realty Fund VIII	12/31/11	12/31/18				80,000,000	18,487,795	0.17%	12,334,302
Angelo Gordon Realty Fund IX	10/10/14	10/10/22				65,000,000	54,640,817	0.50%	7,572,500
						830,000,000	410,439,586	3.76%	135,091,985
Outstanding Commitments							135,091,985		
Total							545,531,571		

PRIVATE CREDIT

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Torchlight Debt Opportunity Fund III	09/30/08	06/30/16	2nd 1 YR	LP	06/30/18	75,000,000	0	0.00%	0
Torchlight Debt Opportunity Fund IV	08/01/12	08/30/20				60,000,000	9,757,393	0.09%	0
Torchlight Debt Opportunity Fund V	12/31/14	09/17/22				75,000,000	17,726,083	0.16%	15,000,000
Angelo Gordon Energy Credit Opportunities	09/10/15	09/10/20				16,500,000	3,440,530	0.03%	2,319,783
CCCERA StepStone	12/01/17	11/30/27				1,020,000,000	711,276,805	6.52%	426,176,937
						1,374,500,000	742,200,811	6.80%	443,496,720
Outstanding Commitments							443,496,720		
Total							1,185,697,531		

**Private Market Investments
As of June 30, 2021**

PRIVATE EQUITY	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Adams Street Partners	12/22/95	12/22/25				269,565,614	173,506,401	1.59%	21,172,580
Adams Street Secondary II	12/31/08	12/31/20				30,000,000	5,917,328	0.05%	1,635,000
Adams Street Secondary V	10/31/12	10/31/22				40,000,000	19,487,359	0.18%	9,154,125
Adams Street Venture Innovation Fund	03/09/16	03/09/28				75,000,000	104,626,170	0.96%	15,712,500
AE Industrial Partners Fund II	05/18/18	05/18/28				35,000,000	22,683,033	0.21%	17,192,048
Bay Area Equity Fund	06/14/04	12/31/14	2nd 2 YR	LP	12/31/2017	10,000,000	2,391,176	0.02%	0
Bay Area Equity Fund II	2/29/09	12/31/19				10,000,000	12,663,995	0.12%	0
Carpenter Community BancFund	10/31/09	10/31/19				30,000,000	0	0.00%	0
EIF USPF II	06/15/05	06/15/15	3rd 1 YR	LP	06/15/18	50,000,000	4,883,535	0.04%	0
EIF USPF III	02/28/07	02/28/17	1st 1 YR	LP	02/28/18	65,000,000	17,292,848	0.16%	0
EIF USPF IV	06/28/10	06/28/20				50,000,000	32,871,476	0.30%	(762,069)
Ares EIF V	09/09/15	11/19/25				50,000,000	20,355,969	0.19%	22,742,894
Genstar Capital Partners IX	02/18/19	02/18/29				50,000,000	38,224,538	0.35%	20,293,503
Genstar Capital Partners X	04/01/21	04/01/31				42,500,000	0	0.00%	42,500,000
GTCR VIII	10/27/20	12/31/36				50,000,000	0	0.00%	50,000,000
Hellman & Friedman Capital Partners	05/10/21	05/10/31				75,000,000	0	0.00%	75,000,000
Oaktree Private Investment Fund 2009	02/28/10	12/15/19				40,000,000	998,913	0.01%	6,308,961
Ocean Avenue Fund II	05/07/14	05/07/24				30,000,000	24,499,622	0.22%	3,000,000
Ocean Avenue Fund III	12/09/15	12/09/25				50,000,000	55,271,738	0.51%	6,000,000
Paladin III	08/15/08	08/15/18				25,000,000	32,208,986	0.30%	419,157
Pathway	11/09/98	05/31/21				125,000,000	8,851,458	0.08%	10,606,259
Pathway 2008	12/26/08	12/26/23				30,000,000	14,943,180	0.14%	3,051,576
Pathway 6	05/24/11	05/24/26				40,000,000	42,093,302	0.39%	3,699,425
Pathway 7	02/07/13	02/07/23				70,000,000	79,650,394	0.73%	6,405,626
Pathway 8	11/23/15	11/23/25				50,000,000	67,021,685	0.61%	9,137,253
Siguler Guff CCCERA Opportunities	06/03/14	05/31/25				200,000,000	170,086,903	1.56%	30,597,500
Siguler Guff Secondary Opportunities	12/31/16	12/31/26				50,000,000	0	0.00%	0
Siris Partners IV	05/18/18	05/18/28				35,000,000	20,081,494	0.18%	17,473,632
TPG Healthcare Partners, L.P.	06/27/19	06/27/29				24,000,000	8,584,037	0.08%	17,127,594
Trident VIII, L.P.	05/24/19	05/24/29				40,000,000	26,500,051	0.24%	15,892,041
Real Assets									
Aether III & III Surplus	11/30/13	11/30/20				75,000,000	63,414,598	0.58%	4,747,674
Aether IV	01/01/16	01/01/28				50,000,000	46,245,506	0.42%	7,682,755
Commonfund Capital Natural Resources IX	06/30/13	06/30/20				50,000,000	33,427,492	0.31%	4,100,006
Wastewater Opportunity Fund	12/31/15	11/30/22				25,000,000	15,638,165	0.14%	1,754,258
						1,986,065,614	1,164,421,354	12.26%	422,644,298
Outstanding Commitments							422,644,298		
Total							1,587,065,652		

Market value equals the most recent reported net asset value, plus capital calls after net asset value date, less distributions after net asset value date.
The Target Termination column is the beginning of liquidation of the fund, however, some funds may be extended for an additional two or three years.



Meeting Date
08/11/2021
Agenda Item
#6

**Contra Costa County Employees' Retirement Association
Liquidity Report – June 2021**

June 2021 Performance

	Cash Flow	Coverage Ratio
Benefit Cash Flow Projected by Model	\$44,500,000	
Liquidity Sub-Portfolio Cash Flow	\$44,500,000	100%
Actual Benefits Paid	\$44,565,208	99.9%
<i>Next Month's Projected Benefit Payment</i>	\$44,500,000	

Monthly Manager Positioning – June 2021

	Beginning Market Value	Liquidity Program Cash Flow	Market Value Change/Other Activity	Ending Market Value
Sit	\$596,186,838	(\$1,250,000)	(\$810,009)	\$594,126,829
DFA	\$352,532,548	(\$15,250,000)	(\$338,213)	\$336,944,335
Insight	\$933,023,422	(\$28,000,000)	(\$410,063)	\$904,613,359
Liquidity	\$1,881,742,808	(\$44,500,000)	(\$1,558,285)	\$1,835,684,523
Cash	\$255,910,650	(\$65,208)	(\$90,472,633)	\$165,372,809
Liquidity + Cash	\$2,137,653,459	(\$44,565,208)	(\$92,030,918)	\$2,001,057,332

Functional Roles

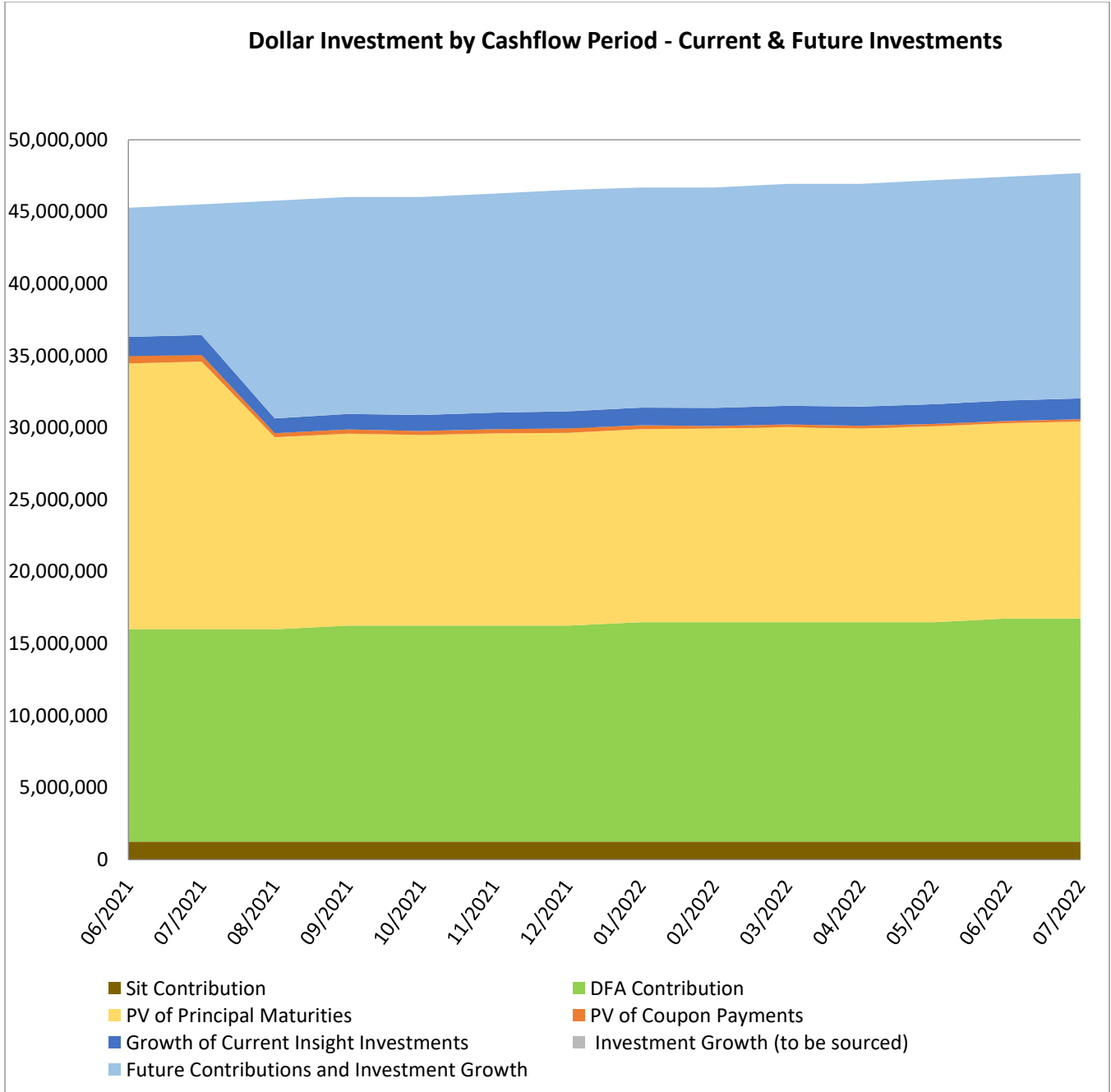
Manager	Portfolio Characteristics	Liquidity Contribution
Sit	High quality portfolio of small balance, government guaranteed mortgages with higher yields.	Pays out net income on monthly basis.
DFA	High quality, short duration portfolio of liquid, low volatility characteristics.	Pays out a pre-determined monthly amount. DFA sources liquidity from across their portfolio.
Insight	Buy and maintain (limited trading) portfolio of high quality, short duration, primarily corporates.	Completion portfolio makes a payment through net income and bond maturities that bridges the gap between other managers and projected payment.
Cash	STIF account at custodial bank.	Buffer in the event of any Liquidity shortfall/excess.

Notes

The sixth cash flow for 2021 from the liquidity program was completed on June 23rd. The actuarial model cash flow was slightly lower than actual experience, producing \$65 thousand less than the actual benefits paid.

Cash Flow Structure

The chart below shows the sources of cash flow for the next year and a half of CCCERA's projected benefit payments. This table will change slightly as the model is tweaked and as the portfolios receive new rounds of funding each July as part of the Annual Funding Plan, as well as the reduction from four to three years of Liquidity needs in July 2021.

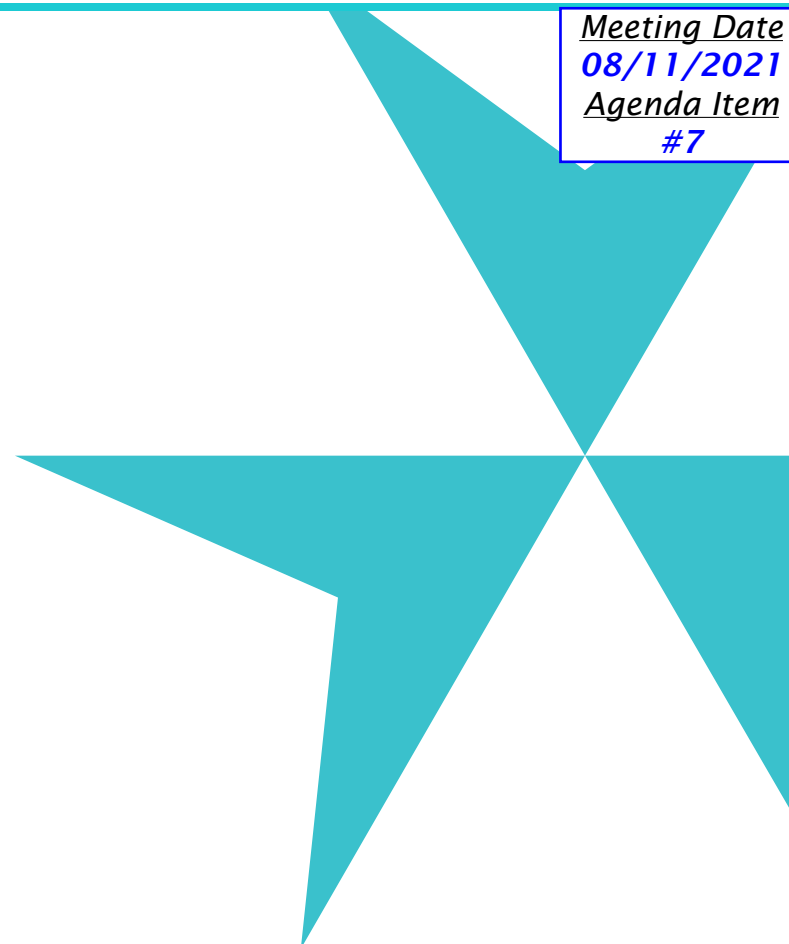


Meeting Date
08/11/2021
Agenda Item
#7

Contra Costa County Employees' Retirement Association

Actuarial Valuation and Review

As of December 31, 2020



This report has been prepared at the request of the Board of Retirement to assist in administering the Fund. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Retirement and may only be provided to other parties in its entirety, unless expressly authorized by Segal. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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August 4, 2021

Board of Retirement
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of December 31, 2020. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2022-2023.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement Association. The census information and financial information on which our calculations were based was prepared by the staff of the Association. That assistance is gratefully acknowledged.

The actuarial calculations were directed under the supervision of Andy Yeung, ASA, MAAA, FCA and Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Association.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal

A handwritten signature in black ink, appearing to read "Paul Angelo", written over a horizontal line.

Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary

A handwritten signature in black ink, appearing to read "Andy Yeung", written over a horizontal line.

Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

EK/jl

Table of Contents

Section 1: Actuarial Valuation Summary	5
Purpose and Basis	5
Valuation Highlights.....	7
Summary of Key Valuation Results	12
Important Information About Actuarial Valuations	16
Section 2: Actuarial Valuation Results	18
A. Member Data	18
B. Financial Information.....	22
C. Actuarial Experience	25
D. Other Changes in the Actuarial Accrued Liability	30
E. Development of Unfunded Actuarial Accrued Liability	31
F. Recommended Contribution.....	32
G. Funded Status	45
H. Actuarial Balance Sheet.....	47
I. Volatility Ratios.....	48
J. Risk Assessment	49
Section 3: Supplemental Information	52
Exhibit A: Table of Plan Coverage.....	52
Exhibit B: Members in Active Service as of December 31, 2020.....	64
Exhibit C: Retired Members and Beneficiaries as of December 31, 2020	77
Exhibit D: Reconciliation of Member Data.....	84
Exhibit E: Summary Statement of Income and Expenses on a Market Value Basis.....	85
Exhibit F: Summary Statement of Plan Assets.....	86
Exhibit G: Summary of Total Allocated Reserves	87
Exhibit H: Development of the Fund Through December 31, 2020	88

Table of Contents

Exhibit I: Table of Amortization Bases	89
Exhibit J: Projection of UAAL Balances and Payments.....	103
Exhibit K: Definition of Pension Terms.....	105
Section 4: Actuarial Valuation Basis.....	109
Exhibit I: Actuarial Assumptions and Methods	109
Exhibit II: Summary of Plan Provisions	124
Exhibit III: Member Contribution Rates	133
Exhibit IV: Refundability Factors.....	161
Exhibit V: Summary of Cost Groups and Employers.....	162
Exhibit VI: Allocation of Valuation Value of Assets as of December 31, 2020	164
Exhibit VII: Recommended Employer Contribution Rates – For Use in Preparing Contribution Rate Packet	167

Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a valuation of the Contra Costa County Employees' Retirement Association ("CCCERA" or "the Plan") as of December 31, 2020. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of current Plan assets to cover the estimated cost of settling the Plan's accrued benefit obligations.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Plan, as administered by the Board of Retirement;
- The characteristics of covered active members¹, inactive vested members, and retired members and beneficiaries as of December 31, 2020, provided by the Retirement Association;
- The assets of the Plan as of December 31, 2020, provided by CCCERA;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2020 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2020 valuation and
- The funding policy adopted by the Board of Retirement.

¹ During the preparation of the December 31, 2020 valuation, we determined based on research by CCCERA that annual information for active members reported for the valuation has been collected from December 1, 2019 to November 30, 2020. In particular, the service credit provided for active members was reported through November 30, 2020 instead of December 31, 2020. While this is consistent with how information was reported for active members in the past, from discussions with CCCERA we understand that the Association is going to change its pension administration system so as to report service through December 31. This change will first be reflected in the valuation following the change in the pension administration system, and Segal will reflect the liability for that additional month of service at the same time.

Section 1: Actuarial Valuation Summary

One of the general goals of an actuarial valuation is to establish contributions which fully fund the Association's liabilities, and which, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the Association's liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Association's staff. This information has not been audited by us, but it has been reviewed and found to be consistent, both internally and with prior year's information.

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy adopted by the Board on February 26, 2014, and most recently amended on October 14, 2020. Details of the funding policy are provided in *Section 4, Exhibit I* starting on page 109.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit I* starting on page 89. A graphical projection of the Unfunded Actuarial Accrued Liability (UAAL) amortization balances and payments has been included in *Section 3, Exhibit J* starting on page 103.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2022 through June 30, 2023.

Section 1: Actuarial Valuation Summary

Valuation Highlights

1. Central Contra Costa Sanitary District (“the District”) made a prepayment in the amount of \$70,763,669 towards the District’s UAAL on June 25, 2021. Consistent with CCCERA’s Actuarial Funding Policy, this prepayment has been used to reduce the District’s UAAL contribution rate effective July 1, 2021. The first actuarial valuation to reflect the prepayment in the Table of Amortization Bases for the District will be as of December 31, 2021, as that will be the first valuation in which the prepayment will be reflected in CCCERA’s financial statements. Accordingly, the UAAL, funded ratios, and employer contributions shown in the body of this report do not reflect the District’s prepayment. However, we have included the District’s contribution rates in Cost Group #3 after reflecting this prepayment and have included those rates in footnotes in *Sections 1 and 2* as well as in *Section 4, Exhibit VII*.
- Pg. 45 2. The ratio of the Valuation Value of Assets to the Actuarial Accrued Liability increased from 90.6% to 91.8%. This ratio is one measure of funding status, and its history is a measure of funding progress. The funded ratio measured on a market value basis increased from 91.7% to 95.6%. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan’s benefit obligation or the need for, or the amount of, future contributions.
- Pg. 31 3. The Association’s UAAL (which is based on the Valuation Value of Assets) decreased from \$947 million as of December 31, 2019 to Pgs. 89-104 \$859 million as of December 31, 2020. The decrease in UAAL is primarily due to contributions paying down a portion of the UAAL and COLA increases lower than expected, offset to some degree by individual salary increases greater than expected and an investment return on actuarial value (i.e. after asset smoothing) less than the 7.00% assumed rate. A reconciliation of the Association’s UAAL is provided in *Section 2, Exhibit E*. A schedule of the current UAAL amortization amounts is provided in *Section 3, Exhibit H*. A graphical projection of the UAAL amortization bases and payments is provided in *Section 3, Exhibit I*. Even though the periods used for the current amortization bases range from 2 to 18 years, the total UAAL is expected to be fully paid off by the December 31, 2028 valuation.
- Pg. 25 4. The net actuarial loss from investment and contribution experience is \$32.3 million, or 0.3% of actuarial accrued liability. The net experience loss from sources other than investment and contribution experience was 0.1% of the actuarial accrued liability. This loss was primarily due to individual salary increases greater than expected.
- Pg. 33 5. The average employer rate calculated in this valuation (excluding any employer subvention of member rates or member subvention of Pg. 167 employer rates) has decreased from 35.66% of payroll to 35.26% of payroll. This decrease is primarily due to amortizing the prior year’s UAAL over a greater than expected total payroll, COLA increases lower than expected, and the effect of changes in member demographics on Normal Cost, offset by individual salary increases greater than expected and an investment return on actuarial value (i.e. after asset smoothing) less than the 7.00% assumed rate. A complete reconciliation of the Association’s aggregate employer rate is provided in *Section 2, Subsection F*. A new schedule with the recommended employer contribution rates that will be used in preparing the contribution rate packet is provided in *Section 4, Exhibit VII*.

Section 1: Actuarial Valuation Summary

Separate employer contribution rates are shown for members with membership dates before January 1, 2013 (non-PEPRA or “legacy” members) and on or after January 1, 2013 (PEPRA members). However, the average employer contribution rates shown in *Section 1* are based on all members regardless of their membership date. A detailed schedule of the employer contribution rates is provided in *Section 2, Subsection F*.

- Pg. 34 6. The average member rate calculated in this valuation has decreased from 11.97% of payroll to 11.85% of payroll. A complete reconciliation of the Association’s aggregate member rate is provided in *Section 2, Subsection F*.

The detailed member rates are provided in *Section 4, Exhibit III* of this report. They are shown by cost group.

- Pg. 26 7. The rate of return on the Market Value of Assets was 9.57% for the 2020 plan year. The return on the Valuation Value of Assets was 6.62% for the same period after considering the recognition of prior years’ investment gains and losses and the markedly different returns during the first-half of 2020 (a market loss at -3.27%) and the second-half of 2020 (a market gain of 13.30%). This resulted in an actuarial loss when measured against the assumed rate of return of 7.00%. This actuarial investment loss increased the average employer contribution rate by 0.27% of pay. As part of the review of the assumed long-term rate of return on investments and other assumptions in the triennial experience study scheduled after this valuation, we would examine the low fixed income interest rate environment, and evolving expectations of future investment returns for various asset classes. This will allow us to assist the Board as they continue to monitor anticipated investment returns relative to the assumed long-term rate of return on investments of 7.00%.

- Pg. 23 8. The total unrecognized net investment gain as of December 31, 2020 is about \$392 million as compared to an unrecognized net investment gain of \$112 million in the previous valuation. This deferred net investment gain of \$392 million will be recognized in the determination of the Actuarial Value of Assets for funding purposes in the next few years as shown in *Section 2, Subsection B*.

The net deferred gains of \$392 million represent about 3.9% of the Market Value of Assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$392 million net market gains is expected to have an impact on the Association’s future funded ratio and contribution rate requirements. This potential impact may be illustrated as follows:

- a. If the net deferred gains were recognized immediately in the valuation value of assets, the funded percentage would increase from 91.8% to 95.6%.
For comparison purposes, if all the deferred gains in the December 31, 2019 valuation had been recognized immediately in the December 31, 2019 valuation, the funded percentage would have increased from 90.6% to 91.7%.
- b. If the net deferred gains were recognized immediately in the valuation value of assets, the average employer contribution rate would decrease from 35.26% to about 32.22% of payroll.

For comparison purposes, if all the deferred gains in the December 31, 2019 valuation had been recognized immediately in the December 31, 2019 valuation, the average employer contribution rate would have decreased from 35.66% to 34.74% of payroll.

Section 1: Actuarial Valuation Summary

9. The actuarial valuation report as of December 31, 2020 is based on financial information as of that date. Changes in the value of assets subsequent to that date, to the extent that they exist, are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.
10. This valuation reflects the \$260,000 additional contributions made by San Ramon Valley Fire Department and the \$30,000 additional contributions made by LAFCO towards their respective UAALs. Based on CCCERA's funding policy, each of these amounts has been amortized as a level percent of pay (credit) over a period of eighteen years beginning with the December 31, 2020 valuation to reduce the employer UAAL contributions.
11. Effective with the results included in the December 31, 2020 valuation, we reflected a recommended change to allocate the suspended COLA normal cost contributions for legacy Safety members with at least 30 years of service to the employers instead of to the remaining legacy Safety members with less than 30 years of service. This is consistent with the current practice to allocate the suspended basic normal cost contributions for legacy Safety members with over 30 years of service to the employer normal cost.

Based on our understanding of the 1937 CERL, the basic normal cost for legacy Safety members with at least 30 years of service has been allocated to the employer. In contrast, in prior actuarial valuations one-half of the COLA normal cost for legacy Safety members with at least 30 years of service had been allocated to the legacy Safety members with less than 30 years of service. This prior practice has produced stable member rates as long as there were (1) relatively few Safety members who continue to work after 30 years of service (which continues to be the case for Safety cost groups with enhanced benefit) and (2) relatively small changes in the proportions of payroll for members with less than 30 years of service compared to payroll for members with at least 30 years of service.

However, the proportions of payroll have shifted significantly based on the December 31, 2020 membership information reported by CCCERA for certain cost groups. For that reason this valuation reflects a recommended change to treat suspended COLA member contributions the same as current practice for suspended basic member contributions.

This change results in a net increase in the average employer contribution rate of 0.02% of payroll and a net decrease in the average member contribution rates of 0.03% of payroll. However, this change only impacts the Safety cost groups and the impact varies depending upon each cost group's proportions of payroll for members with less than 30 years compared to payroll for members with over 30 years of service.

12. On July 30, 2020, the California Supreme Court issued a decision in the case of Alameda County Deputy Sheriffs' Association et al. v. Alameda County Employees' Retirement Association (ACERA) and Board of Retirement of ACERA. That decision has important implications for CCCERA and its members, In particular, the decision requires pension systems like CCCERA to exclude certain pay items from a legacy member's compensation earnable. While the CCCERA Board of Retirement has deliberated on what actions to take to comply with AB197 and the Alameda decision, a final decision has not been made as of the date of the report. It should be noted that neither the December 31, 2020 assets provided by CCCERA nor the liabilities we calculated using the membership data provided by CCCERA reflect the financial impact of the California Supreme Court decision.

Section 1: Actuarial Valuation Summary

Pg. 49

13. The Actuarial Standards Board approved Actuarial Standard of Practice No. 51 (ASOP 51) regarding risk assessment, which was first effective with CCCERA's December 31, 2018 actuarial valuation. ASOP 51 requires actuaries to identify risks that "may reasonably be anticipated to significantly affect the plan's future financial condition". Investment risk, asset/liability mismatch risk, interest rate risk, longevity and other demographic risks and contribution risk are also cited as examples in ASOP 51. The standard does not require the actuary to evaluate the likelihood of contributing entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

The actuary's assessment can be qualitative or quantitative (e.g., based on numerical demonstrations). The actuary may use non-numerical methods for assessing risks that might take the form of commentary about potential adverse experience and the likely effect on future results. While the standard does not require that every valuation include a quantitative risk assessment, the actuary may recommend that a more detailed risk assessment be performed. When making that decision, the actuary will take into account such factors as the Plan's design, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions.

Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan. We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Association's future financial condition, but have included a brief discussion of key risks that may affect the Association in *Section 2, Subsection J*. A more detailed assessment of the risks tailored to specific interests or concerns of the Board would provide the Board with a better understanding of the inherent risks and is recommended. This assessment would further discuss and highlight information and risks particular to CCCERA such as detailed historical experience and key events, growing plan maturity, heightened contribution sensitivity to asset and liability changes, and projected sensitivity to potential future investment returns through selected scenario or stress test projections.

14. Segal strongly recommends an actuarial funding policy that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy adopted by the Board meets this standard.
15. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of December 31, 2020, will be provided separately. The accounting disclosures will utilize different methodologies from those employed in the funding valuation, as required by the GASB. However, the actuarially determined contribution in this valuation is expected to be used as the actuarially determined contribution (ADC) for GASB financial reporting.

Section 1: Actuarial Valuation Summary

16. It is important to note that this actuarial valuation is based on plan assets as of December 31, 2020. Due to the COVID-19 pandemic, market conditions have changed significantly since the onset of the Public Health Emergency. The plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after December 31, 2020. While it is impossible to determine how the pandemic will affect market conditions and other demographic experience of the plan in future valuations, Segal is available to prepare projections of potential outcomes upon request.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results

		December 31, 2020		December 31, 2019	
		Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)
Average	General				
Employer	• Cost Group #1 – County and Small Districts (Tiers 1 and 4)	32.63%	\$8,335	32.61%	\$7,953
Contribution	• Cost Group #2 – County and Small Districts (Tiers 3 and 5)	25.99%	187,609	26.19%	178,442
Rates:²	• Cost Group #3 – Central Contra Costa Sanitary District ³	51.71%	19,399	50.16%	19,002
	• Cost Group #4 – Contra Costa Housing Authority	41.51%	2,645	43.11%	2,523
	• Cost Group #5 – Contra Costa County Fire Protection District	35.90%	2,533	34.13%	2,170
	• Cost Group #6 – Small Districts (Non-Enhanced Tiers 1 and 4)	15.33%	158	15.94%	150
	Safety				
	• Cost Group #7 – County (Tiers A and D)	70.95%	\$38,766	71.22%	\$40,304
	• Cost Group #8 – Contra Costa Fire Protection District	63.54%	28,341	67.06%	27,368
	• Cost Group #9 – County (Tiers C and E)	61.32%	32,350	61.68%	28,573
	• Cost Group #10 – Moraga-Orinda Fire District	67.47%	6,006	70.62%	5,835
	• Cost Group #11 – San Ramon Valley Fire District	77.24%	18,017	76.62%	17,297
	• Cost Group #12 – Rodeo-Hercules Fire Protection District	90.21%	2,287	92.95%	2,112
	• Cost Group #13 – East Contra Costa Fire Protection District	66.59%	2,714	68.04%	2,658
All Categories Combined		35.26%	\$349,160	35.66%	\$334,386

Note: Pages 162 and 163 contain a summary that shows which employers are in each cost group.

¹ Based on projected compensation for each valuation date shown.

² These rates do not include any employer subvention of member contributions or any member subvention of employer contributions.

³ These rates are before reflecting the prepayment of \$70,763,669 towards the District's UAAL on June 25, 2021. This prepayment has been used to reduce the District's UAAL contribution rate. Consistent with CCCERA's Actuarial Funding Policy, the District's contribution rate has been reduced effective July 1, 2021. The average employer contribution rate for Cost Group #3 after reflecting this prepayment is 15.63% of pay or about \$5,863,000 as of December 31, 2020 and 15.82% of pay or about \$5,994,000 as of December 31, 2019.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2020		December 31, 2019	
		Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)
Average Member Contribution Rates:²	General				
	• Cost Group #1 – County and Small Districts (Tiers 1 and 4)	11.07%	\$2,828	10.99%	\$2,680
	• Cost Group #2 – County and Small Districts (Tiers 3 and 5)	10.61%	76,571	10.69%	72,838
	• Cost Group #3 – Central Contra Costa Sanitary District	11.35%	4,258	11.39%	4,315
	• Cost Group #4 – Contra Costa Housing Authority	11.44%	729	11.40%	667
	• Cost Group #5 – Contra Costa County Fire Protection District	11.78%	831	11.76%	748
	• Cost Group #6 – Small Districts (Non-Enhanced Tiers 1 and 4)	13.43%	138	13.44%	127
	Safety				
	• Cost Group #7 – County (Tiers A and D)	17.97%	\$9,819	18.02%	\$10,197
	• Cost Group #8 – Contra Costa Fire Protection District	16.52%	7,368	16.96%	6,921
	• Cost Group #9 – County (Tiers C and E)	16.23%	8,563	16.16%	7,486
	• Cost Group #10 – Moraga-Orinda Fire District	17.25%	1,536	17.29%	1,428
	• Cost Group #11 – San Ramon Valley Fire District	15.88%	3,704	17.00%	3,838
	• Cost Group #12 – Rodeo-Hercules Fire Protection District	11.13%	282	13.38%	304
	• Cost Group #13 – East Contra Costa Fire Protection District	17.72%	722	17.23%	673
All Categories Combined		11.85%	\$117,349	11.97%	\$112,223

Note: Pages 162 and 163 contain a summary that shows which employers are in each cost group.

¹ Based on projected compensation for each valuation date shown.

² These rates do not include any employer subvention of member contributions or any member subvention of employer contributions.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2020	December 31, 2019
Actuarial Accrued Liability as of December 31:	<ul style="list-style-type: none"> • Retired members and beneficiaries • Inactive vested members¹ • Active members • Total Actuarial Accrued Liability • Normal Cost for plan year beginning December 31² 	\$6,719,970,806 308,470,870 <u>3,493,186,499</u> \$10,521,628,175 \$271,126,476	\$6,459,417,019 309,988,352 <u>3,306,316,851</u> \$10,075,722,222 \$260,197,190
Assets as of December 31:	<ul style="list-style-type: none"> • Market Value of Assets (MVA) • Actuarial Value of Assets (AVA) • Actuarial Value of Assets as a percentage of Market Value of Assets • Valuation Value of Assets (VVA) 	\$10,070,237,862 9,678,508,253 96.1% \$9,662,282,926	\$9,257,012,679 9,144,580,232 98.8% \$9,128,668,718
Funded Status as of December 31:	<ul style="list-style-type: none"> • Unfunded Actuarial Accrued Liability on Market Value of Assets basis³ • Funded percentage on MVA basis³ • Unfunded Actuarial Accrued Liability on Valuation Value of Assets basis • Funded percentage on VVA basis 	\$467,615,640 95.6% \$859,345,249 91.8%	\$834,621,057 91.7% \$947,053,504 90.6%
Key Assumptions:	<ul style="list-style-type: none"> • Net investment return • Price Inflation • Payroll growth increase 	7.00% 2.75% 3.25%	7.00% 2.75% 3.25%

¹ Includes inactive members with member contributions on deposit.

² Includes administrative expenses.

³ Both the UAAL and the funded percentage on MVA basis have been calculated by using the MVA reduced by non-valuation reserves in the amount of \$16,225,327 as of December 31, 2020 and \$15,911,514 as of December 31, 2019.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2020	December 31, 2019	Change From Prior Year
Demographic Data	Active Members:			
as of December 31:	• Number of members	10,099	10,075	0.2%
	• Average age	46.3	46.3	0.0
	• Average service	10.2	10.1	0.1
	• Total projected compensation	\$990,041,699	\$937,531,264	5.6%
	• Average projected compensation	\$98,034	\$93,055	5.4%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	7,655	7,395	3.5%
	– Disability retired	896	907	-1.2%
	– Beneficiaries	<u>1,467</u>	<u>1,435</u>	2.2%
	– Total	10,018	9,737	2.9%
	• Average age	70.8	70.6	0.2
	• Average monthly benefit	\$4,219	\$4,116	2.5%
	Inactive Vested Members:			
	• Number of members ¹	3,591	3,638	-1.3%
	• Average Age	46.7	46.4	0.3
	Total Members:	23,708	23,450	1.1%

¹ Includes 2,039 inactive non-vested members with member contributions on deposit as of December 31, 2020 and 1,978 as of December 31, 2019.

Section 1: Actuarial Valuation Summary

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of Benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant Data	An actuarial valuation for a plan is based on data provided to the actuary by the Association. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the Market Value of Assets as of the valuation date, as provided by the Association. The Association uses a “Valuation Value of Assets” that differs from market value to gradually reflect year-to-year changes in the Market Value of Assets in determining the contribution requirements.
Actuarial Assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results that does not mean that the previous assumptions were unreasonable.
Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the Association. Segal is not responsible for the use or misuse of its report, particularly by any other party.

An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan. Future contribution requirements may differ from those determined in the valuation because of:

- Differences between actual experience and anticipated experience;
- Changes in actuarial assumptions or methods;
- Changes in statutory provisions; and
- Differences between the contribution rates determined by the valuation and those adopted by the Board.

Some actuarial results in this report are not rounded, but that does not imply precision.

If the Association is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.

Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Association should look to their other advisors for expertise in these areas.

As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

A. Member Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive vested members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A, B, and C.*

Member Population: 2011 – 2020

Year Ended December 31	Active Members	Inactive Vested Members ¹	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2011	8,629	2,214	8,085	10,299	1.19	0.94
2012	8,640	2,288	8,517	10,805	1.25	0.99
2013	9,124	2,345	8,625	10,970	1.20	0.95
2014	9,159	2,647	8,871	11,518	1.26	0.97
2015	9,642	2,790	9,068	11,858	1.23	0.94
2016	9,848	3,089	9,100	12,189	1.24	0.92
2017	10,038	3,327	9,267	12,594	1.25	0.92
2018	10,021	3,477	9,547	13,024	1.30	0.95
2019	10,075	3,638	9,737	13,375	1.33	0.97
2020	10,099	3,591	10,018	13,609	1.35	0.99

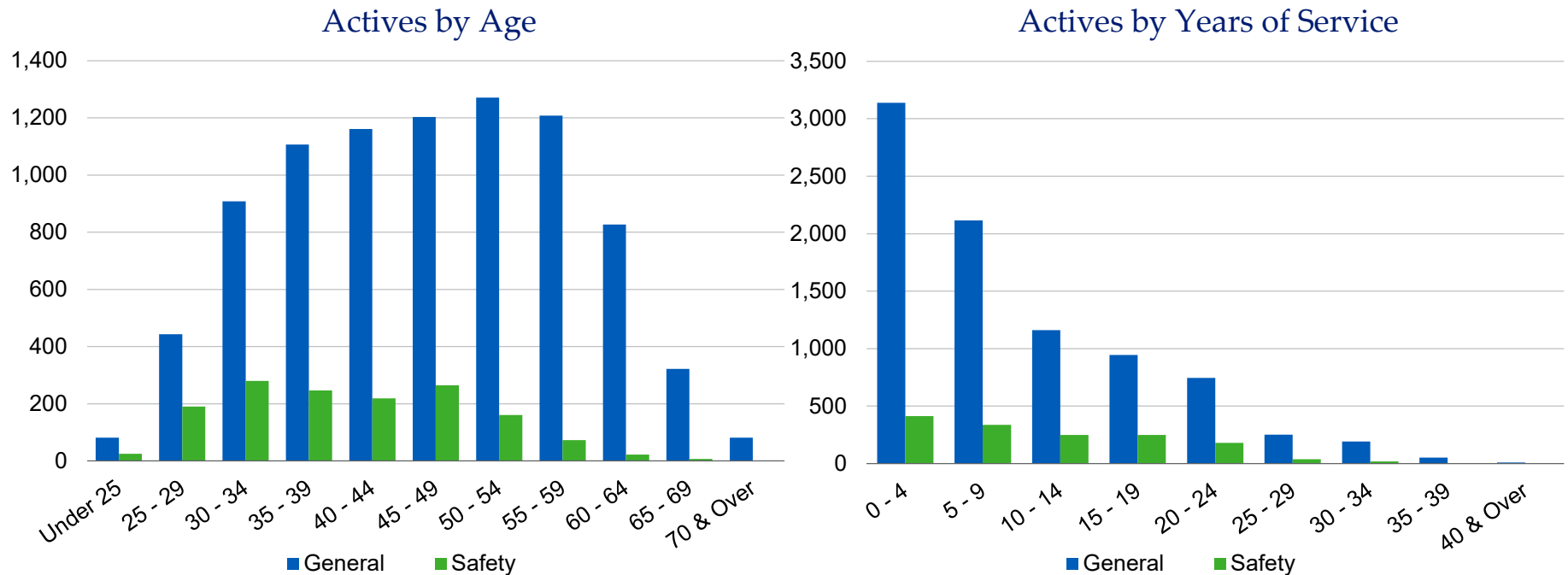
¹ Includes inactive members with member contributions on deposit.

Section 2: Actuarial Valuation Results

Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 10,099 active members with an average age of 46.3, average years of service of 10.2 years and average compensation of \$98,034. The 10,075 active members in the prior valuation had an average age of 46.3, average service of 10.1 years and average compensation of \$93,055.

Distribution of Active Members as of December 31, 2020



Inactive Members

In this year's valuation, there were 3,591 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,638 in the prior valuation.

Section 2: Actuarial Valuation Results

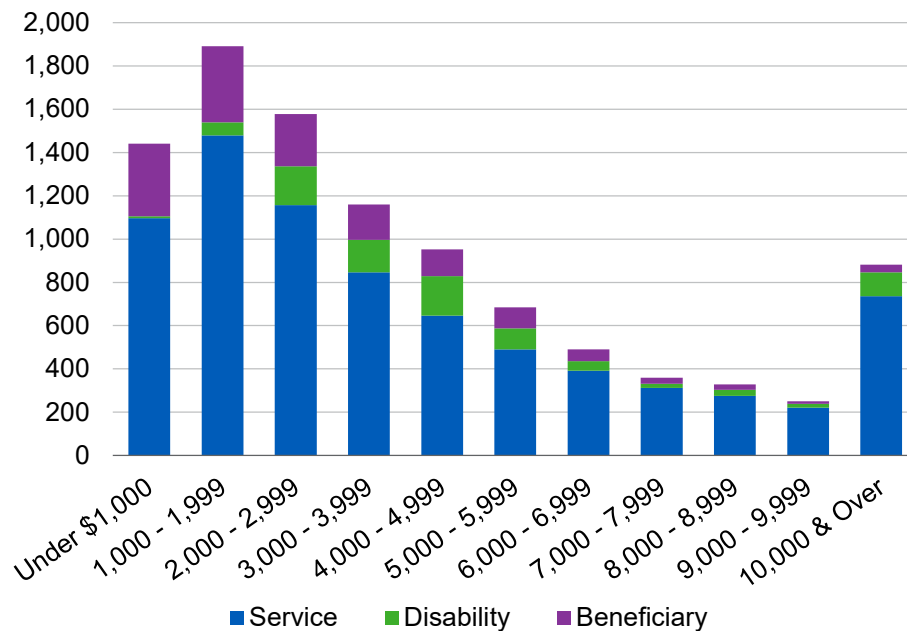
Retired Members and Beneficiaries

As of December 31, 2020, 8,551 retired members and 1,467 beneficiaries were receiving total monthly benefits of \$42,267,178. For comparison, in the previous valuation, there were 8,302 retired members and 1,435 beneficiaries receiving monthly benefits of \$40,074,456.

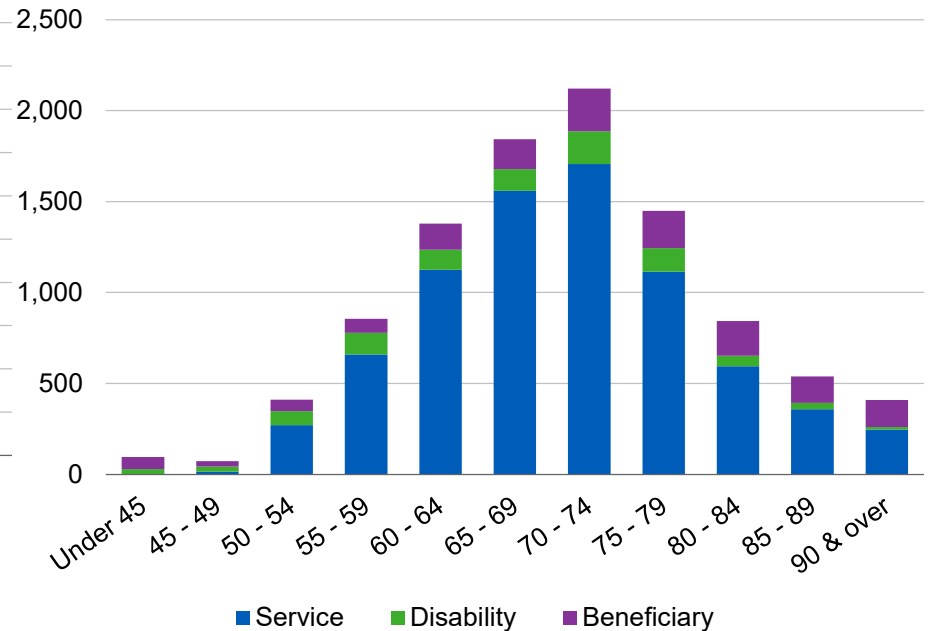
As of December 31, 2020, the average monthly benefit for retired members and beneficiaries is \$4,219, compared to \$4,116 in the previous valuation. The average age for retired members and beneficiaries is 70.8 in the current valuation, compared with 70.6 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of December 31, 2020

Retired Members and Beneficiaries
by Type and Monthly Amount



Retired Members and Beneficiaries
by Type and Age



Section 2: Actuarial Valuation Results

Historical Plan Population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

Member Data Statistics: 2011 – 2020

Year Ended December 31	Active Members			Retired Members and Beneficiaries		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2011	8,629	46.2	10.7	8,085	69.1	\$3,381
2012	8,640	45.9	10.2	8,517	69.0	3,518
2013	9,124	45.8	10.1	8,625	69.3	3,579
2014	9,159	45.8	9.9	8,871	69.4	3,669
2015	9,642	45.9	9.9	9,068	69.9	3,706
2016	9,848	45.9	9.9	9,100	70.0	3,799
2017	10,038	46.0	9.8	9,267	70.3	3,892
2018	10,021	46.2	9.9	9,547	70.4	3,986
2019	10,075	46.3	10.1	9,737	70.6	4,116
2020	10,099	46.3	10.2	10,018	70.8	4,219

Section 2: Actuarial Valuation Results

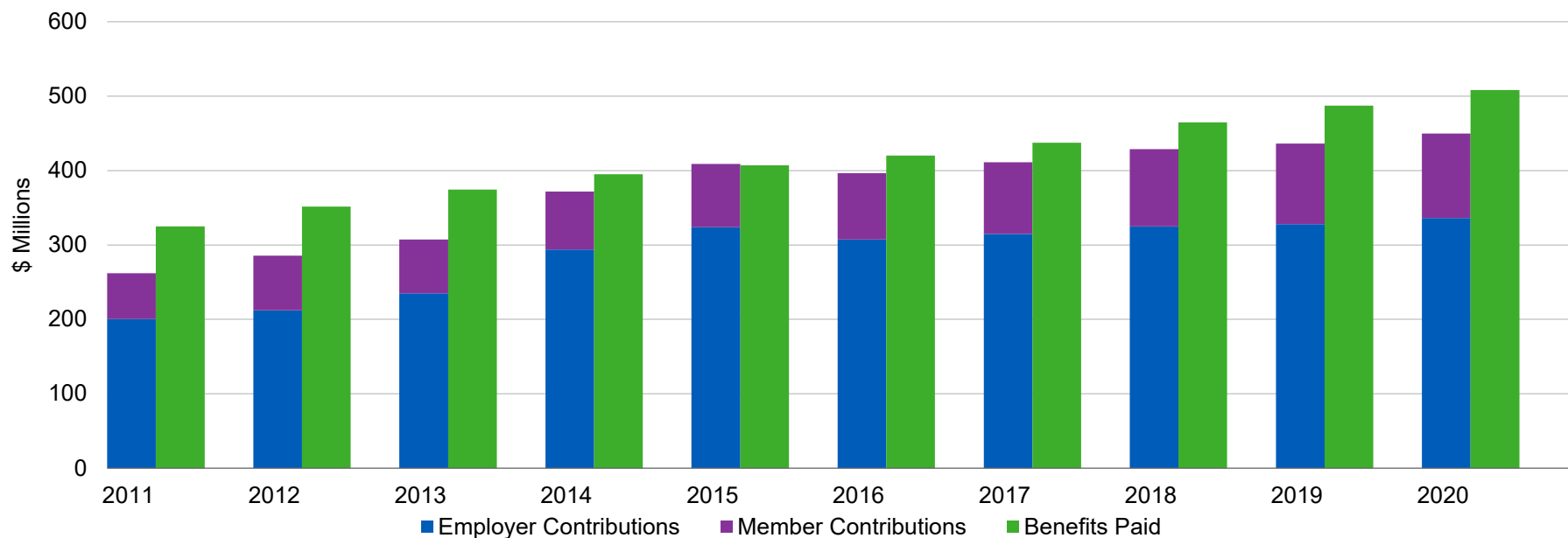
B. Financial Information

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of transactions for the valuation year, is presented in *Section 3, Exhibits E, F, G and H*.

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the valuation asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Comparison of Contributions Made with Benefits for Years Ended December 31, 2011 – 2020



Section 2: Actuarial Valuation Results

Determination of Actuarial Value of Assets for Year Ended December 31, 2020

1 Market Value of Assets						\$10,070,237,862
2		Expected Return	Actual Return¹	Investment Gain/(Loss)	Percent Deferred	Unrecognized Amount
a)	Period ended December 31, 2015	\$253,672,471	\$(142,612,600)	\$(396,285,071)	0%	\$0
b)	Period ended June 30, 2016	239,907,822	297,615,324	57,707,502	0%	0
c)	Period ended December 31, 2016	249,584,567	196,258,919	(53,325,648)	10%	(5,332,565)
d)	Period ended June 30, 2017	255,728,819	488,764,245	233,035,426	20%	46,607,085
e)	Period ended December 31, 2017	271,873,066	498,651,736	226,778,670	30%	68,033,601
f)	Period ended June 30, 2018	288,460,475	63,645,390	(224,815,085)	40%	(89,926,034)
g)	Period ended December 31, 2018	289,889,306	(258,676,279)	(548,565,585)	50%	(274,282,792)
h)	Period ended June 30, 2019	280,075,265	820,000,188	539,924,922	60%	323,954,953
i)	Period ended December 31, 2019	307,217,326	348,171,398	40,954,072	70%	28,667,850
j)	Period ended June 30, 2020	318,113,258	(302,015,927)	(620,129,184)	80%	(496,103,347)
k)	Period ended December 31, 2020	306,509,032	1,184,409,986	877,900,954	90%	790,110,858
l)	Total unrecognized return ¹					\$391,729,609
3	Actuarial Value of Assets (1) - (2l)					\$9,678,508,253
4	Ratio of Actuarial Value to Market Value					96.1%
5	Non-valuation reserves and designations:					
a)	Post Retirement Death Benefit					\$16,225,327
b)	Statutory Contingency					0
c)	Additional One Percent Contingency					0
d)	Unrestricted Designation					0
e)	Total					\$16,225,327
6	Valuation Value of Assets (3) - (5e)					\$9,662,282,926

Note: Results may be slightly off due to rounding.

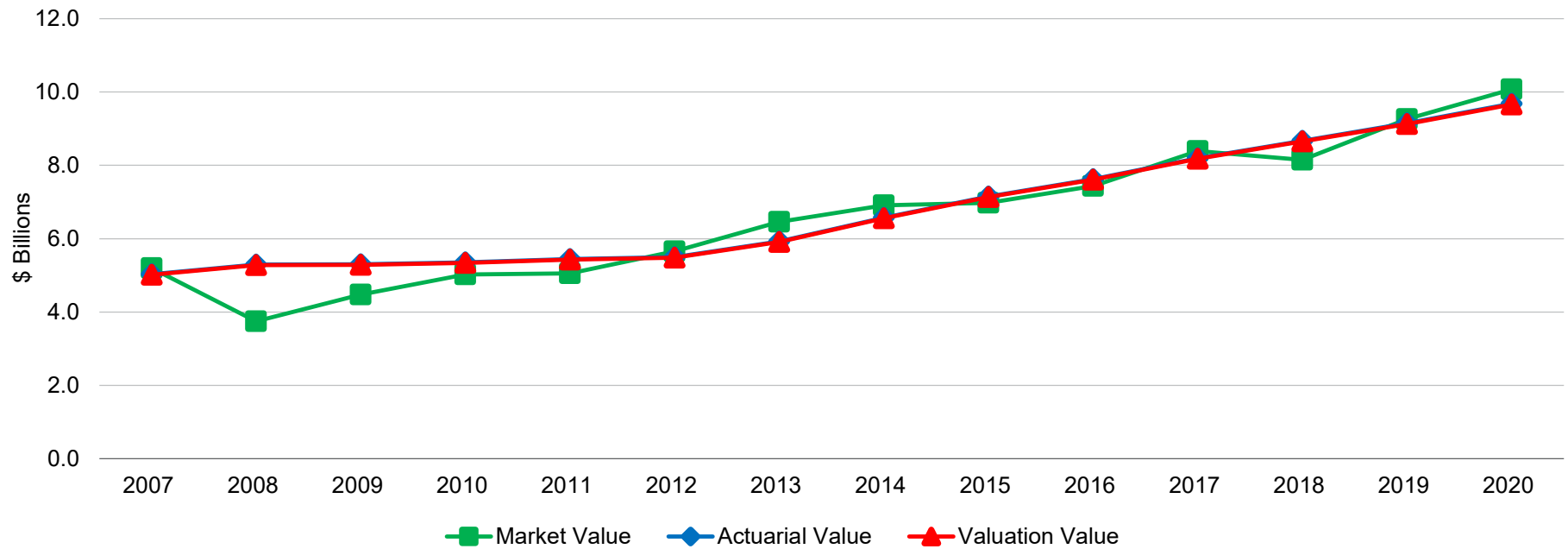
¹ Deferred return as of December 31, 2020 recognized in each of the next five years:

(a)	Amount recognized on December 31, 2021	\$99,684,273
(b)	Amount recognized on December 31, 2022	35,731,886
(c)	Amount recognized on December 31, 2023	112,873,594
(d)	Amount recognized on December 31, 2024	55,649,761
(e)	Amount recognized on December 31, 2025	87,790,095
(f)	Total unrecognized return as of December 31, 2020	\$391,729,609

Section 2: Actuarial Valuation Results

The Market Value, Actuarial Value and Valuation Value of Assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the Actuarial Value of Assets tracks the Market Value of Assets. The Valuation Value of Assets is generally the actuarial value, excluding any non-valuation reserves. The Valuation Value of Assets is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the Unfunded Actuarial Accrued Liability is an important element in determining the contribution requirement.

Market Value, Actuarial¹ Value, and Valuation¹ Value of Assets as of December 31, 2007 – 2020



¹ The Actuarial Value and the Valuation Value have been substantially the same over the time period shown, differing by no more than \$20 million.

Section 2: Actuarial Valuation Results

C. Actuarial Experience

To calculate any actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the actuarially determined contribution will decrease from the previous year. On the other hand, the actuarially determined contribution will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years. There are no changes in actuarial assumptions reflected in this valuation.

The total loss is \$38.4 million, which includes \$34.6 million from investment losses, a gain of \$2.2 million from contribution experience and \$6.0 million in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 0.1% of the Actuarial Accrued Liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended December 31, 2020

1	Net loss from investments ¹	\$34,592,930
2	Net gain from contribution experience ²	(2,248,842)
3	Net loss from other experience ³	6,020,459
4	Net experience loss: 1 + 2 + 3	\$38,364,547

¹ Details on next page.

² See *Section 2, Subsection E* for further details.

³ See *Section 2, Subsection E* for further details. Does not include the effect of plan, method, or assumption changes, if any.

Section 2: Actuarial Valuation Results

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the Market Value of Assets was 9.57% for the year ended December 31, 2020.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets is 7.00%. The actual rate of return on a valuation basis for the 2020 plan year was 6.62% after considering the recognition of prior years' investment gains and losses and the very non-level returns during the first-half of 2020 (a market loss at -3.27%) and the second-half of 2020 (a market gain of 13.30%). Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended December 31, 2020 with regard to its investments.

Investment Experience for Year Ended December 31, 2020

	Market Value	Actuarial Value	Valuation Value
1 Net investment income	\$882,394,061	\$603,096,897	\$602,005,689
2 Average value of assets	9,222,221,248	9,109,788,801	9,094,265,987
3 Rate of return: 1 ÷ 2	9.57%	6.62%	6.62%
4 Assumed rate of return	7.00%	7.00%	7.00%
5 Expected investment income: 2 x 4	645,555,487	637,685,216	636,598,619
6 Actuarial gain/(loss): 1 - 5	\$236,838,574	\$(34,588,319)	\$(34,592,930)

Section 2: Actuarial Valuation Results

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial and valuation basis compared to the actual market value investment return for the last ten years, including averages over select time periods.

Investment Return – Market Value, Actuarial Value and Valuation Value: 2011 – 2020

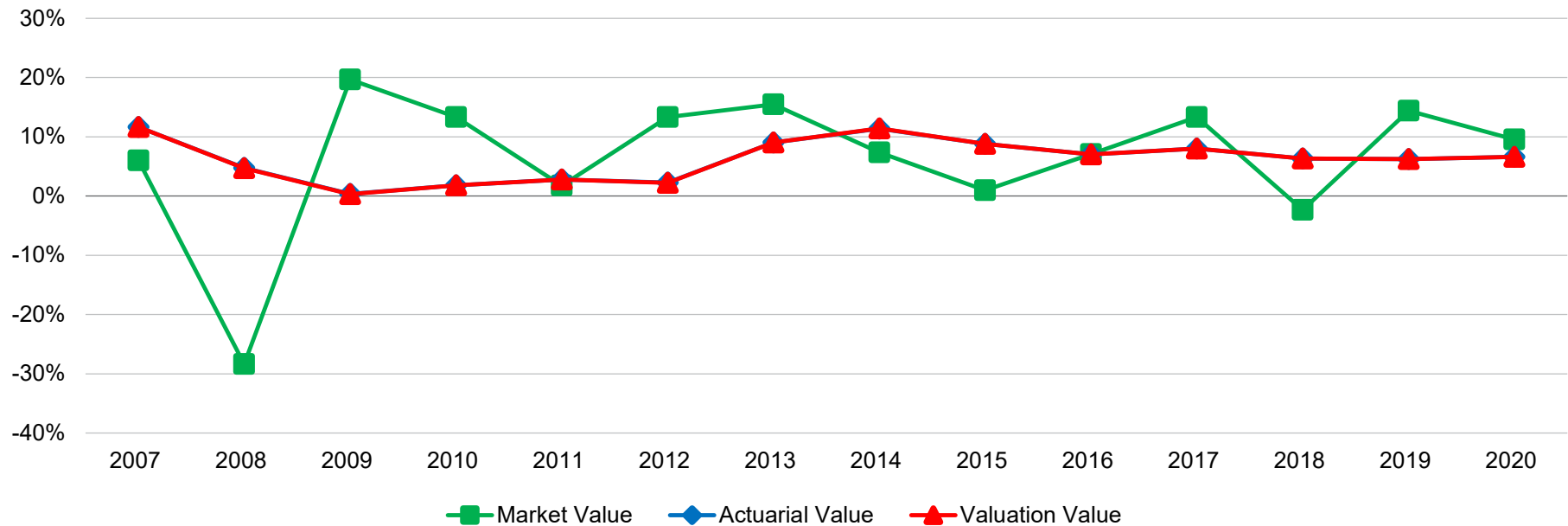
Year Ended December 31	Market Value Investment Return		Actuarial Value Investment Return ¹		Valuation Value Investment Return ¹	
	Amount	Percent	Amount	Percent	Amount	Percent
2011	\$88,042,268	1.76%	\$148,058,548	2.78%	\$146,988,614	2.77%
2012	668,138,997	13.31%	121,921,302	2.25%	120,826,177	2.24%
2013	870,984,744	15.50%	492,503,802	9.01%	491,324,308	9.02%
2014	473,522,261	7.35%	673,040,867	11.39%	671,957,212	11.40%
2015	65,495,657	0.95%	577,199,123	8.78%	576,151,245	8.79%
2016	493,874,242	7.10%	502,352,173	7.04%	501,328,149	7.04%
2017	987,415,981	13.31%	608,519,874	8.00%	607,477,597	8.00%
2018	(195,030,888)	-2.33%	516,825,883	6.32%	515,766,323	6.32%
2019	1,168,171,586	14.39%	538,946,876	6.24%	537,877,737	6.24%
2020	882,394,061	9.57%	603,096,897	6.62%	602,005,689	6.62%
Most recent five-year geometric average return		8.32%	6.81%		6.81%	
Most recent ten-year geometric average return		7.97%	6.90%		6.90%	

Note: Each year's yield is weighted by the average asset value in that year.

Section 2: Actuarial Valuation Results

Section 2, Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market, Actuarial¹ and Valuation¹ Rates of Return for Years Ended December 31, 2007 – 2020



¹ The Actuarial and Valuation Rates of Return have been substantially the same over the time period shown, differing by no more than 0.02%.

Section 2: Actuarial Valuation Results

Contributions

Contributions for the year ended December 31, 2020 totaled \$449.9 million, compared to the projected amount of \$447.7 million. This resulted in a gain of \$2.2 million for the year, when adjusted for timing. The \$2.2 million in contribution gain included additional UAAL Contributions of \$260,000 and \$30,000 made by San Ramon Valley Fire District and LAFCO, respectively.

Non-Investment Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- salary increases (greater or smaller than projected),
- cost-of-living adjustments (COLAs) higher or lower than anticipated, and
- administrative expenses different than assumed.

The net loss from this other experience for the year ended December 31, 2020 amounted to \$6.0 million, which is 0.1% of the Actuarial Accrued Liability. The loss was primarily due to individual salary increases higher than expected, offset to some extent by the gain due to COLA increases lower than expected. See *Section 2, Subsection E* for a detailed development of the Unfunded Actuarial Accrued Liability.

Section 2: Actuarial Valuation Results

D. Other Changes in the Actuarial Accrued Liability

Actuarial Assumptions

There are no assumption changes reflected in this report.

Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan Provisions

There were no changes in plan provisions since the prior valuation.

A summary of plan provisions is in *Section 4, Exhibit II*.

Section 2: Actuarial Valuation Results

E. Development of Unfunded Actuarial Accrued Liability

Development for Year Ended December 31, 2020

1	Unfunded Actuarial Accrued Liability as of December 31, 2019	\$947,053,504
2	Normal Cost at middle of year ¹	251,009,384
3	Expected administrative expenses	10,687,860
4	Expected employer and member contributions	(447,676,406)
5	Interest	<u>59,906,360</u>
6	Expected Unfunded Actuarial Accrued Liability as of December 31, 2020	\$820,980,702
7	Changes due to:	
	a) Investment return less than expected (after asset smoothing)	\$34,592,930
	b) Actual contributions greater than expected in item 4 ²	(1,949,350)
	c) Gain from additional UAAL contributions ³	(299,492)
	d) Individual salary increases higher than expected	60,049,931
	e) COLA increases lower than expected in 2021	(42,727,313)
	f) Other experience gain ⁴	<u>(11,302,159)</u>
	Total changes	<u>\$38,364,547</u>
8	Unfunded Actuarial Accrued Liability as of December 31, 2020	\$859,345,249

Note: The sum of items 7b and 7c equals the “Net gain from contribution experience” shown in *Section 2, Subsection C*.
The sum of items 7d through 7f equals the “Net loss from other experience” shown in *Section 2, Subsection C*.

¹ Excludes administrative expense load.

² Primarily due to scheduled 18-month lag in implementing contribution rates from December 31, 2019 valuation.

³ \$290,000 in additional contributions adjusted with \$9,492 in interest to the end of the year.

⁴ Other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability, termination and leave cashout experience.

Section 2: Actuarial Valuation Results

F. Recommended Contribution

The recommended contribution is equal to the employer Normal Cost payment and a payment on the Unfunded Actuarial Accrued Liability. As of December 31, 2020, the average recommended employer contribution is 35.26% of compensation.

The Board sets the funding policy used to calculate the recommended contribution based on layered amortization periods. See *Section 4, Exhibit I* for further details on the funding policy.

The contribution requirement as of December 31, 2020 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

Average Recommended Employer Contribution

All Tiers Combined	December 31, 2020		December 31, 2019	
	Amount (\$ in '000s)	% of Projected Compensation	Amount (\$ in '000s)	% of Projected Compensation
1 Total Normal Cost	\$271,127	27.38%	\$260,197	27.75%
2 Expected member contributions	<u>117,349</u>	<u>11.85%</u>	<u>112,223</u>	<u>11.97%</u>
3 Employer Normal Cost: 1 – 2	\$153,778	15.53%	\$147,974	15.78%
4 Actuarial Accrued Liability	10,521,628		10,075,722	
5 Valuation Value of Assets	<u>9,662,283</u>		<u>9,128,669</u>	
6 Unfunded Actuarial Accrued Liability: 4 – 5	\$859,345		\$947,054	
7 Payment on Unfunded Actuarial Accrued Liability	195,382	19.73%	186,412	19.88%
8 Total average recommended employer contribution: 3 + 7	\$349,160	35.26%	\$334,386	35.66%
9 Projected compensation	\$990,042		\$937,531	

Note: Contributions are assumed to be paid at the middle of the year.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Employer Contribution Rate

The chart below details the changes in the average recommended employer contribution rate from the prior valuation to the current year's valuation.

Reconciliation from December 31, 2019 to December 31, 2020

	Contribution Rate ¹	Estimated Annual Dollar Amount ²
Average Recommended Employer Contribution as of December 31, 2019	35.66%	\$334,386,129
1 Effect of investment return less than expected (after asset smoothing)	0.27%	\$2,673,113
2 Effect of actual contributions greater than expected ³	(0.02%)	(198,008)
3 Effect of additional UAAL contributions	0.00%	(22,977)
4 Effect of individual salary increases higher than expected in 2021	0.47%	4,653,196
5 Effect of amortizing prior year's UAAL over a larger than expected projected total payroll	(0.44%)	6,011,685 ⁴
6 Effect of COLA increases lower than expected in 2021	(0.33%)	(3,267,138)
7 Effect of changes in active member demographics on Normal Cost ⁵	(0.27%)	(2,673,113)
8 Effect of other gains ⁶	(0.10%)	7,399,057
9 Effect of change in method to allocate to the employers suspended member COLA normal cost contributions for legacy Safety members with at least 30 years of service ⁷	<u>0.02%</u>	<u>198,008</u>
Total change	(0.40%)	\$14,773,823
Average Recommended Employer Contribution as of December 31, 2020	35.26%	\$349,159,952

¹ These rates do not include any employer subvention of member contributions, or member subvention of employer contributions.

² Based on projected compensation for each valuation date shown.

³ Primarily due to scheduled 18-month lag in implementing contribution rates from December 31, 2019 valuation.

⁴ Represents the dollar increase in UAAL amortization payments for amortization bases established prior to the December 31, 2020 valuation.

⁵ This also includes the effect of legacy Safety members who for the first time reached 30 years of reported service as of December 31, 2020 and stopped making member basic contributions.

⁶ Other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability, termination and leave cashout experience. Estimated annual dollar cost also reflects changes in payroll from prior valuation.

⁷ This is consistent with the current practice to allocate suspended basic normal cost contributions for legacy Safety members with at least 30 years of service to the employer normal cost. This change only impacts the Safety cost groups.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Member Contribution Rate

The chart below details the changes in the average recommended member contribution rate from the prior valuation to the current year's valuation.

Reconciliation from December 31, 2019 to December 31, 2020

	Contribution Rate ¹	Estimated Annual Dollar Amount ²
Average Recommended Member Contribution as of December 31, 2019	11.97%	\$112,223,113
1 Effect of changes in active member demographics ³	(0.09%)	\$5,422,547
2 Effect of change in method to allocate to the employers suspended member COLA normal cost contributions for legacy Safety members with at least 30 years of service ⁴	<u>(0.03%)</u>	<u>(297,013)</u>
Total change	(0.12%)	\$5,125,534
Average Recommended Member Contribution as of December 31, 2020	11.85%	\$117,348,647

¹ These rates do not include any employer subvention of member contributions, or member subvention of employer contributions.

² Based on projected compensation for each valuation date shown.

³ This also includes the effect of legacy Safety members who first reached 30 years of reported service as of December 31, 2020 and stopped making member basic contributions. Estimated annual dollar cost also reflects change in payroll from prior valuation.

⁴ This is consistent with the current practice to allocate the suspended basic normal cost contributions for legacy Safety members with over 30 years of service to the employer normal cost. This change only impacts the Safety cost groups.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate

December 31, 2020 Actuarial Valuation¹
Recommended Rates for FY 2022-23

December 31, 2019 Actuarial Valuation²
Recommended Rates for FY 2021-22

Cost Group #1	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 1 w/ Courts								
Normal Cost	13.23%	3.64%	16.87%	\$1,658,412	13.23%	3.65%	16.88%	\$1,736,294
UAAL	<u>11.42%</u>	<u>1.51%</u>	<u>12.93%</u>	<u>1,271,089</u>	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>1,326,907</u>
Total Contribution	24.65%	5.15%	29.80%	\$2,929,501	24.34%	5.44%	29.78%	\$3,063,201
District General Tier 1 w/o POB								
Normal Cost	13.23%	3.64%	16.87%	\$1,178,799	13.23%	3.65%	16.88%	\$1,166,433
UAAL	<u>16.30%</u>	<u>5.43%</u>	<u>21.73%</u>	<u>1,518,394</u>	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>1,514,014</u>
Total Contribution	29.53%	9.07%	38.60%	\$2,697,193	29.34%	9.45%	38.79%	\$2,680,447
District General Tier 1 w/ POB (Moraga)								
Normal Cost	13.23%	3.64%	16.87%	\$54,726	13.23%	3.65%	16.88%	\$78,570
UAAL ³	<u>10.42%</u>	<u>2.01%</u>	<u>12.43%</u>	<u>40,323</u>	<u>6.88%</u>	<u>0.45%</u>	<u>7.33%</u>	<u>34,118</u>
Total Contribution	23.65%	5.65%	29.30%	\$95,049	20.11%	4.10%	24.21%	\$112,688
District General Tier 1 w/ UAAL Prepayment (First Five)								
Normal Cost	13.23%	3.64%	16.87%	\$253,684	13.23%	3.65%	16.88%	\$271,413
UAAL	<u>11.55%</u>	<u>1.83%</u>	<u>13.38%</u>	<u>201,203</u>	<u>10.96%</u>	<u>1.90%</u>	<u>12.86%</u>	<u>206,776</u>
Total Contribution	24.78%	5.47%	30.25%	\$454,887	24.19%	5.55%	29.74%	\$478,189
District General Tier 1 w/ UAAL Prepayment (LAFCO)								
Normal Cost	13.23%	3.64%	16.87%	\$31,243	13.23%	3.65%	16.88%	\$28,988
UAAL ⁴	<u>13.32%</u>	<u>4.33%</u>	<u>17.65%</u>	<u>32,687</u>	<u>14.34%</u>	<u>5.14%</u>	<u>19.48%</u>	<u>32,681</u>
Total Contribution	26.55%	7.97%	34.52%	\$63,930	27.57%	8.79%	36.36%	\$61,669

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

³ The number of active members increased from 7 as of December 31, 2019 to 11 as of December 31, 2020 and the projected compensation increased from \$656,313 as of December 31, 2019 to \$1,062,538 as of December 31, 2020 for an increase of about 62%. This resulted in a reduction of the POB credit rate of about 5.3% as the POB credit is spread over a larger projected compensation.

⁴ During 2019, one of the two LAFCO active members retired and there was only one LAFCO active member as of December 31, 2019. We understand that there was a new active member hired since December 31, 2019. The contribution rate credit for the UAAL prepayment reflects the payroll of this new active member hired after December 31, 2019.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #1	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 4 (3% COLA) w/ Courts								
Normal Cost	9.07%	3.04%	12.11%	\$0	8.91%	2.99%	11.90%	\$0
UAAL	11.42%	1.51%	12.93%	0	11.11%	1.79%	12.90%	0
Total Contribution	20.49%	4.55%	25.04%	\$0	20.02%	4.78%	24.80%	\$0
District General Tier 4 (3% COLA) w/o POB								
Normal Cost	9.07%	3.04%	12.11%	\$567,220	8.91%	2.99%	11.90%	\$450,633
UAAL	16.30%	5.43%	21.73%	1,017,811	16.11%	5.80%	21.91%	829,695
Total Contribution	25.37%	8.47%	33.84%	\$1,585,031	25.02%	8.79%	33.81%	\$1,280,328
District General Tier 4 (3% COLA) w/ POB (Moraga)								
Normal Cost	9.07%	3.04%	12.11%	\$89,389	8.91%	2.99%	11.90%	\$22,712
UAAL ³	10.42%	2.01%	12.43%	91,751	6.88%	0.45%	7.33%	13,990
Total Contribution	19.49%	5.05%	24.54%	\$181,140	15.79%	3.44%	19.23%	\$36,702
District General Tier 4 (3% COLA) w/ UAAL Prepayment (First Five)								
Normal Cost	9.07%	3.04%	12.11%	\$156,059	8.91%	2.99%	11.90%	\$115,334
UAAL	11.55%	1.83%	13.38%	172,425	10.96%	1.90%	12.86%	124,638
Total Contribution	20.62%	4.87%	25.49%	\$328,484	19.87%	4.89%	24.76%	\$239,972
District General Tier 4 (3% COLA) w/ UAAL Prepayment (LAFCO)								
Normal Cost	9.07%	3.04%	12.11%	\$0	8.91%	2.99%	11.90%	\$0
UAAL	13.32%	4.33%	17.65%	0	14.34%	5.14%	19.48%	0
Total Contribution	22.39%	7.37%	29.76%	\$0	23.25%	8.13%	31.38%	\$0
County General Tier 4 (2% COLA) w/ Courts								
Normal Cost	8.81%	2.01%	10.82%	\$0	8.87%	2.02%	10.89%	\$0
UAAL	11.42%	1.51%	12.93%	0	11.11%	1.79%	12.90%	0
Total Contribution	20.23%	3.52%	23.75%	\$0	19.98%	3.81%	23.79%	\$0

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

³ The number of active members increased from 7 as of December 31, 2019 to 11 as of December 31, 2020 and the projected compensation increased from \$656,313 as of December 31, 2019 to \$1,062,538 as of December 31, 2020 for an increase of about 62%. This resulted in a reduction of the POB credit rate of about 5.3% as the POB credit is spread over a larger projected compensation.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2020 Actuarial Valuation¹
Recommended Rates for FY 2022-23

December 31, 2019 Actuarial Valuation²
Recommended Rates for FY 2021-22

Cost Group #2	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 3 w/ Courts								
Normal Cost	11.89%	3.35%	15.24%	\$60,298,169	11.95%	3.35%	15.30%	\$60,549,238
UAAL	<u>11.42%</u>	<u>1.51%</u>	<u>12.93%</u>	<u>51,158,486</u>	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>51,051,318</u>
Total Contribution	23.31%	4.86%	28.17%	\$111,456,655	23.06%	5.14%	28.20%	\$111,600,556
District General Tier 3 w/o POB								
Normal Cost	11.89%	3.35%	15.24%	\$457,689	11.95%	3.35%	15.30%	\$456,052
UAAL	<u>16.30%</u>	<u>5.43%</u>	<u>21.73%</u>	<u>652,597</u>	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>653,079</u>
Total Contribution	28.19%	8.78%	36.97%	\$1,110,286	28.06%	9.15%	37.21%	\$1,109,131
County General Tier 5 (3%/4% COLA) w/ Courts								
Normal Cost	8.38%	2.77%	11.15%	\$6,571,396	8.41%	2.76%	11.17%	\$6,448,006
UAAL	<u>11.42%</u>	<u>1.51%</u>	<u>12.93%</u>	<u>7,620,462</u>	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>7,446,668</u>
Total Contribution	19.80%	4.28%	24.08%	\$14,191,858	19.52%	4.55%	24.07%	\$13,894,674
District General Tier 5 (3%/4% COLA) w/o POB								
Normal Cost	8.38%	2.77%	11.15%	\$117,377	8.41%	2.76%	11.17%	\$102,898
UAAL	<u>16.30%</u>	<u>5.43%</u>	<u>21.73%</u>	<u>228,753</u>	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>201,835</u>
Total Contribution	24.68%	8.20%	32.88%	\$346,130	24.52%	8.56%	33.08%	\$304,733
County General Tier 5 (2% COLA) w/ Courts								
Normal Cost	8.21%	1.85%	10.06%	\$26,426,429	8.24%	1.85%	10.09%	\$22,560,233
UAAL	<u>11.42%</u>	<u>1.51%</u>	<u>12.93%</u>	<u>33,965,579</u>	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>28,843,113</u>
Total Contribution	19.63%	3.36%	22.99%	\$60,392,008	19.35%	3.64%	22.99%	\$51,403,346
District General Tier 5 (2% COLA) w/o POB								
Normal Cost	8.21%	1.85%	10.06%	\$35,562	8.24%	1.85%	10.09%	\$40,735
UAAL	<u>16.30%</u>	<u>5.43%</u>	<u>21.73%</u>	<u>76,814</u>	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>88,454</u>
Total Contribution	24.51%	7.28%	31.79%	\$112,376	24.35%	7.65%	32.00%	\$129,189

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2020 Actuarial Valuation¹
Recommended Rates for FY 2022-23

December 31, 2019 Actuarial Valuation²
Recommended Rates for FY 2021-22

Cost Group #3 Before Reflecting Prepayment ³	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23			Estimated Annual Dollar Amount	December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			Estimated Annual Dollar Amount
	Basic	COLA	Total		Basic	COLA	Total	
CCCSD General Tier 1								
Normal Cost	13.11%	3.77%	16.88%	\$4,729,762	13.18%	3.78%	16.96%	\$4,966,474
UAAL	<u>24.05%</u>	<u>12.19%</u>	<u>36.24%</u>	<u>10,154,419</u>	<u>22.87%</u>	<u>11.63%</u>	<u>34.50%</u>	<u>10,102,793</u>
Total Contribution	37.16%	15.96%	53.12%	\$14,884,181	36.05%	15.41%	51.46%	\$15,069,267
CCCSD General Tier 4 (3% COLA)								
Normal Cost	8.41%	2.89%	11.30%	\$1,073,037	8.37%	2.87%	11.24%	\$966,430
UAAL	<u>24.05%</u>	<u>12.19%</u>	<u>36.24%</u>	<u>3,441,317</u>	<u>22.87%</u>	<u>11.63%</u>	<u>34.50%</u>	<u>2,966,356</u>
Total Contribution	32.46%	15.08%	47.54%	\$4,514,354	31.24%	14.50%	45.74%	\$3,932,786

CCCSD made a \$70,763,669 prepayment towards the District's UAAL on June 25, 2021. Consistent with CCCERA's Actuarial Funding Policy, this prepayment has been used to reduce the District's UAAL contribution rate effective July 1, 2021. The first actuarial valuation to reflect the prepayment in the Table of Amortization Bases for the District will be as of December 31, 2021, as that will be the first valuation in which the prepayment will be reflected in CCCERA's financial statements. The employer contribution rates for Cost Group #3 after reflecting this payment are as follows:

Cost Group #3 After Reflecting Prepayment ⁴	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23			Estimated Annual Dollar Amount	December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			Estimated Annual Dollar Amount
	Basic	COLA	Total		Basic	COLA	Total	
CCCSD General Tier 1								
Normal Cost	13.11%	3.77%	16.88%	\$4,729,762	13.18%	3.78%	16.96%	\$4,966,474
UAAL	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>44,832</u>	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>46,854</u>
Total Contribution	13.27%	3.77%	17.04%	\$4,774,594	13.34%	3.78%	17.12%	\$5,013,328
CCCSD General Tier 4 (3% COLA)								
Normal Cost	8.41%	2.89%	11.30%	\$1,073,037	8.37%	2.87%	11.24%	\$966,430
UAAL	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>15,193</u>	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>13,757</u>
Total Contribution	8.57%	2.89%	11.46%	\$1,088,230	8.53%	2.87%	11.40%	\$980,187

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

³ The contribution rates shown are before reflecting the District's prepayment amount of \$70,763,669 made on June 25, 2021. These rates and dollar amounts are used in calculating the average recommended employer contribution rates shown throughout this report.

⁴ The contribution rates shown are after reflecting the District's prepayment amount of \$70,763,669 made on June 25, 2021. These rates and dollar amounts are not used in calculating the average recommended employer contribution rates shown throughout this report.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2020 Actuarial Valuation¹
Recommended Rates for FY 2022-23

December 31, 2019 Actuarial Valuation²
Recommended Rates for FY 2021-22

Cost Group #4	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Contra Costa Housing Authority General Tier 1								
Normal Cost	13.32%	3.71%	17.03%	\$650,252	13.50%	3.74%	17.24%	\$652,952
UAAL	<u>16.49%</u>	<u>10.07%</u>	<u>26.56%</u>	<u>1,014,133</u>	<u>17.04%</u>	<u>10.85%</u>	<u>27.89%</u>	<u>1,056,312</u>
Total Contribution	29.81%	13.78%	43.59%	\$1,664,385	30.54%	14.59%	45.13%	\$1,709,264
Contra Costa Housing Authority General Tier 4 (3% COLA)								
Normal Cost	8.86%	2.99%	11.85%	\$302,384	8.60%	2.92%	11.52%	\$237,763
UAAL	<u>16.49%</u>	<u>10.07%</u>	<u>26.56%</u>	<u>677,749</u>	<u>17.04%</u>	<u>10.85%</u>	<u>27.89%</u>	<u>575,627</u>
Total Contribution	25.35%	13.06%	38.41%	\$980,133	25.64%	13.77%	39.41%	\$813,390
Cost Group #5								
CCCFPD General Tier 1								
Normal Cost	14.64%	3.90%	18.54%	\$728,544	14.19%	3.82%	18.01%	\$646,007
UAAL	<u>11.17%</u>	<u>8.76%</u>	<u>19.93%</u>	<u>783,165</u>	<u>10.25%</u>	<u>8.16%</u>	<u>18.41%</u>	<u>660,355</u>
Total Contribution	25.81%	12.66%	38.47%	\$1,511,709	24.44%	11.98%	36.42%	\$1,306,362
CCCFPD General Tier 4 (3% COLA)								
Normal Cost	11.09%	3.71%	14.80%	\$39,441	11.41%	3.79%	15.20%	\$28,626
UAAL	<u>11.17%</u>	<u>8.76%</u>	<u>19.93%</u>	<u>53,113</u>	<u>10.25%</u>	<u>8.16%</u>	<u>18.41%</u>	<u>34,672</u>
Total Contribution	22.26%	12.47%	34.73%	\$92,554	21.66%	11.95%	33.61%	\$63,298
CCCFPD General Tier 4 (2% COLA)								
Normal Cost	10.25%	2.29%	12.54%	\$358,791	10.28%	2.29%	12.57%	\$324,635
UAAL	<u>11.17%</u>	<u>8.76%</u>	<u>19.93%</u>	<u>570,232</u>	<u>10.25%</u>	<u>8.16%</u>	<u>18.41%</u>	<u>475,461</u>
Total Contribution	21.42%	11.05%	32.47%	\$929,023	20.53%	10.45%	30.98%	\$800,096

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #6	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Non-Enhanced District General Tier 1								
Normal Cost	12.82%	3.89%	16.71%	\$96,847	13.25%	3.99%	17.24%	\$113,548
UAAL	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>927</u>	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>1,054</u>
Total Contribution	12.98%	3.89%	16.87%	\$97,774	13.41%	3.99%	17.40%	\$114,602
Non-Enhanced District General Tier 4 (3% COLA)								
Normal Cost	9.87%	3.32%	13.19%	\$59,144	9.23%	3.15%	12.38%	\$35,153
UAAL	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>717</u>	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>454</u>
Total Contribution	10.03%	3.32%	13.35%	\$59,861	9.39%	3.15%	12.54%	\$35,607
Cost Group #7								
County Safety Tier A								
Normal Cost	22.41%	7.09%	29.50%	\$15,004,551	22.54%	7.10%	29.64%	\$15,701,567
UAAL	<u>21.59%</u>	<u>20.53%</u>	<u>42.12%</u>	<u>21,423,447</u>	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>22,344,538</u>
Total Contribution	44.00%	27.62%	71.62%	\$36,427,998	44.36%	27.46%	71.82%	\$38,046,105
County Safety Tier D								
Normal Cost	14.12%	5.67%	19.79%	\$747,327	14.50%	5.79%	20.29%	\$733,367
UAAL	<u>21.59%</u>	<u>20.53%</u>	<u>42.12%</u>	<u>1,590,573</u>	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>1,524,565</u>
Total Contribution	35.71%	26.20%	61.91%	\$2,337,900	36.32%	26.15%	62.47%	\$2,257,932

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2020 Actuarial Valuation¹
Recommended Rates for FY 2022-23

December 31, 2019 Actuarial Valuation²
Recommended Rates for FY 2021-22

Cost Group #8	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCFPD Safety Tier A								
Normal Cost	22.81%	7.36%	30.17%	\$9,475,123	22.62%	7.08%	29.70%	\$9,101,791
UAAL	<u>9.80%</u>	<u>27.89%</u>	<u>37.69%</u>	<u>11,836,837</u>	<u>11.59%</u>	<u>29.17%</u>	<u>40.76%</u>	<u>12,491,212</u>
Total Contribution	32.61%	35.25%	67.86%	\$21,311,960	34.21%	36.25%	70.46%	\$21,593,003
CCCFPD Safety Tier D								
Normal Cost	12.12%	5.00%	17.12%	\$338,870	12.33%	5.08%	17.41%	\$314,950
UAAL	<u>9.80%</u>	<u>27.89%</u>	<u>37.69%</u>	<u>746,028</u>	<u>11.59%</u>	<u>29.17%</u>	<u>40.76%</u>	<u>737,355</u>
Total Contribution	21.92%	32.89%	54.81%	\$1,084,898	23.92%	34.25%	58.17%	\$1,052,305
CCCFPD Safety Tier E								
Normal Cost	12.01%	3.30%	15.31%	\$1,716,983	12.37%	3.39%	15.76%	\$1,316,743
UAAL	<u>9.80%</u>	<u>27.89%</u>	<u>37.69%</u>	<u>4,226,851</u>	<u>11.59%</u>	<u>29.17%</u>	<u>40.76%</u>	<u>3,405,484</u>
Total Contribution	21.81%	31.19%	53.00%	\$5,943,834	23.96%	32.56%	56.52%	\$4,722,227
Cost Group #9								
County Safety Tier C								
Normal Cost	20.71%	4.39%	25.10%	\$3,779,883	20.83%	4.42%	25.25%	\$3,705,675
UAAL	<u>21.59%</u>	<u>20.53%</u>	<u>42.12%</u>	<u>6,342,975</u>	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>6,190,312</u>
Total Contribution	42.30%	24.92%	67.22%	\$10,122,858	42.65%	24.78%	67.43%	\$9,895,987
County Safety Tier E								
Normal Cost	13.26%	3.58%	16.84%	\$6,348,469	13.24%	3.59%	16.83%	\$5,326,765
UAAL	<u>21.59%</u>	<u>20.53%</u>	<u>42.12%</u>	<u>15,878,711</u>	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>13,350,146</u>
Total Contribution	34.85%	24.11%	58.96%	\$22,227,180	35.06%	23.95%	59.01%	\$18,676,911

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #10	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Moraga-Orinda FD Safety Tier A								
Normal Cost	21.21%	6.88%	28.09%	\$1,829,506	21.21%	6.89%	28.10%	\$1,804,342
UAAL	<u>11.77%</u>	<u>30.49%</u>	<u>42.26%</u>	<u>2,752,401</u>	<u>13.62%</u>	<u>31.25%</u>	<u>44.87%</u>	<u>2,881,169</u>
Total Contribution	32.98%	37.37%	70.35%	\$4,581,907	34.83%	38.14%	72.97%	\$4,685,511
Moraga-Orinda FD Safety Tier D								
Normal Cost	12.29%	5.08%	17.37%	\$414,920	12.44%	5.13%	17.57%	\$323,402
UAAL	<u>11.77%</u>	<u>30.49%</u>	<u>42.26%</u>	<u>1,009,472</u>	<u>13.62%</u>	<u>31.25%</u>	<u>44.87%</u>	<u>825,898</u>
Total Contribution	24.06%	35.57%	59.63%	\$1,424,392	26.06%	36.38%	62.44%	\$1,149,300
Cost Group #11								
San Ramon FD Safety Tier A								
Normal Cost ³	23.77%	7.80%	31.57%	\$5,425,536	22.90%	7.14%	30.04%	\$5,148,480
UAAL	<u>28.79%</u>	<u>21.00%</u>	<u>49.79%</u>	<u>8,556,777</u>	<u>29.16%</u>	<u>20.77%</u>	<u>49.93%</u>	<u>8,557,376</u>
Total Contribution	52.56%	28.80%	81.36%	\$13,982,313	52.06%	27.91%	79.97%	\$13,705,856
San Ramon FD Safety Tier D								
Normal Cost	11.27%	4.64%	15.91%	\$977,050	11.42%	4.70%	16.12%	\$876,330
UAAL	<u>28.79%</u>	<u>21.00%</u>	<u>49.79%</u>	<u>3,057,658</u>	<u>29.16%</u>	<u>20.77%</u>	<u>49.93%</u>	<u>2,714,340</u>
Total Contribution	40.06%	25.64%	65.70%	\$4,034,708	40.58%	25.47%	66.05%	\$3,590,670

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

³ The increase in COLA Normal Cost from 7.14% of payroll to 7.80% of payroll is primarily a result of the change in method to allocate COLA normal cost for legacy Safety members with at least 30 years of service. That change increased the COLA Normal Cost rate by about 0.43% of payroll.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #12	December 31, 2020 Actuarial Valuation ¹ Recommended Rates for FY 2022-23				December 31, 2019 Actuarial Valuation ² Recommended Rates for FY 2021-22			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Non-Enhanced Rodeo-Hercules FPD Safety Tier A								
Normal Cost ³	19.87%	7.24%	27.11%	\$503,859	18.73%	5.21%	23.94%	\$426,614
UAAL ⁴	<u>37.13%</u>	<u>28.82%</u>	<u>65.95%</u>	<u>1,225,730</u>	<u>39.97%</u>	<u>30.70%</u>	<u>70.67%</u>	<u>1,259,350</u>
Total Contribution	57.00%	36.06%	93.06%	\$1,729,589	58.70%	35.91%	94.61%	\$1,685,964
Non-Enhanced Rodeo-Hercules FPD Safety Tier D								
Normal Cost	11.62%	4.80%	16.42%	\$111,186	11.50%	4.76%	16.26%	\$79,754
UAAL ³	<u>37.13%</u>	<u>28.82%</u>	<u>65.95%</u>	<u>446,571</u>	<u>39.97%</u>	<u>30.70%</u>	<u>70.67%</u>	<u>346,632</u>
Total Contribution	48.75%	33.62%	82.37%	\$557,757	51.47%	35.46%	86.93%	\$426,386
Cost Group #13								
East CCCFPD Safety Tier A								
Normal Cost	23.29%	7.51%	30.80%	\$1,050,928	23.29%	7.14%	30.43%	\$1,017,852
UAAL	<u>24.46%</u>	<u>13.42%</u>	<u>37.88%</u>	<u>1,292,505</u>	<u>25.29%</u>	<u>14.21%</u>	<u>39.50%</u>	<u>1,321,234</u>
Total Contribution	47.75%	20.93%	68.68%	\$2,343,433	48.58%	21.35%	69.93%	\$2,339,086
East CCCFPD Safety Tier D								
Normal Cost	12.74%	5.23%	17.97%	\$119,282	12.25%	5.06%	17.31%	\$97,318
UAAL	<u>24.46%</u>	<u>13.42%</u>	<u>37.88%</u>	<u>251,441</u>	<u>25.29%</u>	<u>14.21%</u>	<u>39.50%</u>	<u>222,071</u>
Total Contribution	37.20%	18.65%	55.85%	\$370,723	37.54%	19.27%	56.81%	\$319,389
Total All Employers Combined (Aggregate)								
Normal Cost	12.11%	3.42%	15.53%	\$153,777,829	12.32%	3.46%	15.78%	\$147,974,077
UAAL	<u>13.56%</u>	<u>6.17%</u>	<u>19.73%</u>	<u>195,382,123</u>	<u>13.46%</u>	<u>6.42%</u>	<u>19.88%</u>	<u>186,412,052</u>
Total Contribution	25.67%	9.59%	35.26%	\$349,159,952	25.78%	9.88%	35.66%	\$334,386,129

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

³ The increase in COLA Normal Cost from 5.21% of payroll to 7.24% of payroll is primarily a result of the change in method to allocate COLA normal cost for legacy Safety members with at least 30 years of service. That change increased the COLA Normal Cost rate by about 1.34% of payroll.

⁴ The total UAAL dollar contribution for Rodeo Hercules FPD is \$1,684,906 for FY 2021-22. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 2021-22. The estimated payroll for FY 2021-22 was determined by increasing payroll amounts for 2020 by 18 months of assumed wage inflation. Effective with the December 31, 2020 valuation, Rodeo-Hercules FPD's UAAL contribution for FY 2022-23 will be based on the UAAL rate applied to their payroll.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

The projected compensation for the 2021 calendar year that is used to estimate the annual dollar amount shown on the prior pages as of December 31, 2020 are as follows:

Cost Group #1	Projected Compensation	Cost Group #6	Projected Compensation
County General Tier 1 w/ Courts	\$9,830,542	Non-Enhanced District General Tier 1	\$579,577
District General Tier 1 w/o POB	6,987,546	Non-Enhanced District General Tier 4 (3% COLA)	448,401
District General Tier 1 w/ POB (Moraga)	324,398		
District General Tier 1 w/ UAAL Prepayment (First Five)	1,503,758		
District General Tier 1 w/ UAAL Prepayment (LAFCO)	185,197		
County General Tier 4 (3% COLA) w/ Courts	0		
District General Tier 4 (3% COLA) w/o POB	4,683,897		
District General Tier 4 (3% COLA) w/ POB (Moraga)	738,140		
District General Tier 4 (3% COLA) w/ UAAL Prepayment (First Five)	1,288,676		
District General Tier 4 (3% COLA) w/ UAAL Prepayment (LAFCO)	0		
County General Tier 4 (2% COLA) w/ Courts	0		
Cost Group #2	Projected Compensation	Cost Group #7	Projected Compensation
County General Tier 3 w/ Courts	\$395,657,274	County Safety Tier A	\$50,862,885
District General Tier 3 w/o POB	3,003,209	County Safety Tier D	3,776,288
County General Tier 5 (3%/4% COLA) w/ Courts	58,936,288		
District General Tier 5 (3%/4% COLA) w/o POB	1,052,707		
County General Tier 5 (2% COLA) w/ Courts	262,688,158		
District General Tier 5 (2% COLA) w/o POB	353,495		
Cost Group #3	Projected Compensation	Cost Group #8	Projected Compensation
CCCSA General Tier 1	\$28,019,919	CCCFPD Safety Tier A	\$31,405,776
CCCSA General Tier 4 (3% COLA)	9,495,907	CCCFPD Safety Tier D	1,979,379
		CCCFPD Safety Tier E	11,214,780
Cost Group #4	Projected Compensation	Cost Group #9	Projected Compensation
Contra Costa Housing Authority General Tier 1	\$3,818,272	County Safety Tier C	\$15,059,295
Contra Costa Housing Authority General Tier 4 (3% COLA)	2,551,766	County Safety Tier E	37,698,745
Cost Group #5	Projected Compensation	Cost Group #10	Projected Compensation
CCCFPD General Tier 1	\$3,929,580	Moraga-Orinda FD Safety Tier A	\$6,513,017
CCCFPD General Tier 4 (3% COLA)	266,496	Moraga-Orinda FD Safety Tier D	2,388,717
CCCFPD General Tier 4 (2% COLA)	2,861,175		
		Cost Group #11	Projected Compensation
		San Ramon FD Safety Tier A	\$17,185,734
		San Ramon FD Safety Tier D	6,141,108
		Cost Group #12	Projected Compensation
		Non-Enhanced Rodeo-Hercules FPD Safety Tier A	\$1,858,574
		Non-Enhanced Rodeo-Hercules FPD Safety Tier D	677,135
		Cost Group #13	Projected Compensation
		East CCCFPD Safety Tier A	\$3,412,105
		East CCCFPD Safety Tier D	663,783
		Total All Employers Combined (Aggregate)	\$990,041,699

Section 2: Actuarial Valuation Results

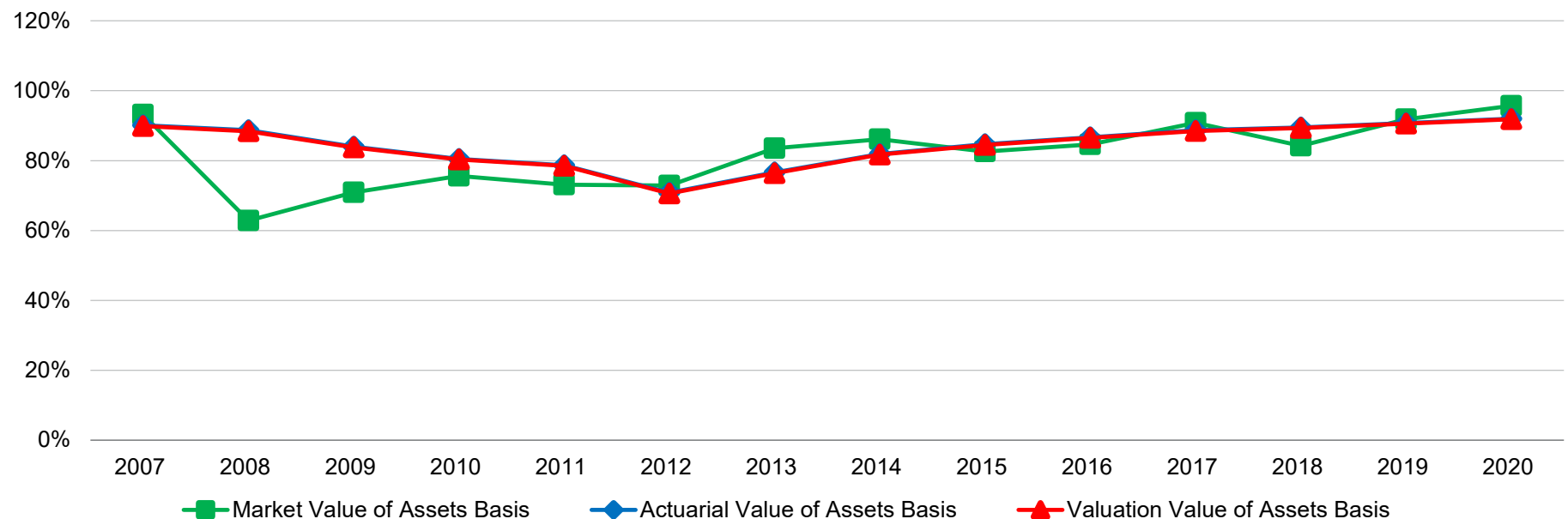
G. Funded Status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the Market, Actuarial and Valuation Value of Assets to the Actuarial Accrued Liability of the Plan. Higher ratios indicate a relatively well-funded plan while lower ratios may indicate recent changes to actuarial assumptions, funding of the plan below actuarial requirements, poor asset performance, or a variety of other causes.

The chart below depicts a history of the funded ratio for the Plan. The chart on the next page shows the Plan's schedule of funding progress for the last ten years.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the Market, Actuarial, or Valuation Value of Assets is used.

Funded Ratio for Years Ended December 31, 2007 – 2020



Section 2: Actuarial Valuation Results

Schedule of Funding Progress for Years Ended December 31, 2011 – 2020

Actuarial Valuation Date as of December 31	Valuation Value of Assets ¹ (a)	Actuarial Accrued Liability (AAL) ² (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Projected Covered Payroll (c)	UAAL as a Percentage of Projected Covered Payroll (%) [(b) - (a)] / (c)
2011	\$5,426,719,066	\$6,915,311,649	\$1,488,592,583	78.5%	\$666,394,146	223.4%
2012	5,482,257,062	7,761,315,535	2,279,058,473	70.6%	652,312,180	349.4%
2013	5,907,416,432	7,731,097,407	1,823,680,975	76.4%	679,428,911	268.4%
2014	6,557,496,101	8,027,438,213	1,469,942,112	81.7%	697,831,837	210.6%
2015	7,136,801,380	8,448,624,096	1,311,822,716	84.5%	746,352,663	175.8%
2016	7,606,997,530	8,794,434,139	1,187,436,609	86.5%	784,412,260	151.4%
2017	8,179,891,191	9,239,246,920	1,059,355,729	88.5%	860,624,613	123.1%
2018	8,650,178,226	9,682,143,750	1,031,965,524	89.3%	896,390,768	115.1%
2019	9,128,668,718	10,075,722,222	947,053,504	90.6%	937,531,262	101.0%
2020	9,662,282,926	10,521,628,175	859,345,249	91.8%	990,041,699	86.8%

¹ Excludes assets for non-valuation reserves.

² Excludes liabilities for non-valuation reserves.

Section 2: Actuarial Valuation Results

H. Actuarial Balance Sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Plan for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the actuarial present value of future benefits of the Plan.

Second, this actuarial present value of future benefits is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

Actuarial Balance Sheet for Year Ended December 31, 2020

	Basic	COLA	Total
Actuarial present value of future benefits ¹			
• Present value of benefits for retired members and beneficiaries	\$3,781,826,256	\$2,938,144,550	\$6,719,970,806
• Present value of benefits for inactive vested members ²	231,645,211	76,825,659	308,470,870
• Present value of benefits for active members	<u>3,974,319,206</u>	<u>1,406,673,935</u>	<u>5,380,993,141</u>
Total actuarial present value of future benefits	\$7,987,790,673	\$4,421,644,144	\$12,409,434,817
Current and future assets ¹			
• Total Valuation Value of Assets	\$5,945,057,256	\$3,717,225,670	\$9,662,282,926
• Present value of future contributions by members	626,161,357	243,078,900	869,240,257
• Present value of future employer contributions for:			
– Entry age normal cost	783,902,168	234,664,217	1,018,566,385
– Unfunded actuarial accrued liability	<u>632,669,892</u>	<u>226,675,357</u>	<u>859,345,249</u>
Total of current and future assets	\$7,987,790,673	\$4,421,644,144	\$12,409,434,817

¹ Excludes administrative expenses.

² Includes inactive members with member contributions on deposit.

Section 2: Actuarial Valuation Results

I. Volatility Ratios

Retirement plans are subject to volatility in the level of required contributions. This volatility tends to increase as retirement plans become more mature.

The Asset Volatility Ratio (AVR), which is equal to the Market Value of Assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measurement since it is based on the current level of assets.

The current AVR is about 10.1. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 10.1% of one-year's payroll. Since actuarial gains and losses are amortized over 18 years, there would be a 0.8% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The Liability Volatility Ratio (LVR), which is equal to the actuarial accrued liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities.

The LVR also indicates how volatile contributions will be in response to changes in the actuarial accrued liability due to actual experience or to changes in actuarial assumptions. The current total Plan LVR is about 10.6, but is 8.1 for General compared to 21.5 for Safety. This means, for example, that assumption changes will have a greater impact on employer contribution rates for Safety than for General.

Volatility Ratios for Years Ended December 31, 2011 – 2020

Year Ended December 31	Asset Volatility Ratio			Liability Volatility Ratio		
	General	Safety	Total	General	Safety	Total
2011	5.9	13.6	7.6	8.0	18.6	10.4
2012	6.7	16.2	8.7	9.0	22.5	11.9
2013	7.3	18.2	9.5	8.6	22.3	11.4
2014	7.5	19.7	9.9	8.6	23.5	11.5
2015	7.1	18.7	9.3	8.4	23.3	11.3
2016	7.2	19.0	9.5	8.3	23.1	11.1
2017	7.4	19.6	9.7	8.0	22.2	10.7
2018	6.9	18.0	9.0	8.1	21.8	10.7
2019	7.5	19.4	9.8	8.1	21.5	10.7
2020	7.8	19.9	10.1	8.1	21.1	10.6

Section 2: Actuarial Valuation Results

J. Risk Assessment

Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a concise discussion of some of the primary risks that may affect the Plan's future financial condition. We recommend a more detailed assessment of the risks to provide the Board with a better understanding of the risks inherent in the Plan that can inform both financial preparation and future decision making. This assessment would enable us to work with the Board to highlight and illustrate particular risks or potential future outcomes they may be interested in discussing and could include scenario testing, sensitivity testing, stress testing and stochastic modeling.

This section provides descriptions and basic assessments of the primary risks that are likely to have an ongoing influence on the Plan's financial health, as well as a discussion of historical trends and maturity measures:

Risk Assessments

- Asset/Liability Mismatch Risk (the potential that future plan experience does not affect asset and liability values in the same way, causing them to diverge)

The most significant asset/liability mismatch risk to the Plan is investment risk, as discussed below. In fact, investment risk has the potential to impact asset/liability mismatch in two ways. The first mismatch is evident in annual valuations: when asset values deviate from assumptions they are typically independent from liability changes. The second mismatch can be caused when systemic asset deviations from assumptions may signal the need for an assumption change, which causes liability values and contribution rates to move in the opposite direction from any change in the expected experience of asset growth rates.

Asset/liability mismatch can also be caused by demographic assumption risk such as longevity, which affects liabilities but have no impact on asset levels. This risk is also discussed below.

- Investment Risk (the risk that investment returns will be different than expected)

The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial condition of the Plan, affecting both funded status and contribution rates. The inherent year-to-year volatility is reduced by smoothing through the Actuarial Value of Assets, however investment experience can still have a sizable impact. As discussed in *Section 2, Subsection I, Volatility Ratios*, on page 48, a 1% asset gain or loss (relative to the assumed investment return) translates to about 10.1% of one-year's payroll. Since actuarial gains

Section 2: Actuarial Valuation Results

and losses are amortized over 18 years, there would be a 0.8% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The year-by-year market value rate of return over the last 10 years has ranged from a low of -2.33% to a high of 15.50%.

- Longevity Risk (the risk that mortality experience will be different than expected)

The actuarial valuation includes current life expectancy assumptions and an expectation of future improvement in life expectancy, which are significant assumptions given the relatively long duration of liabilities for pension plans. Emerging plan experience that does not match these expectations will result in increases or decreases in the actuarially determined contribution over time. This risk can be reduced by using tables appropriate for the Plan (public experience tables) that are weighted by benefit levels, and by using generational mortality projections. Effective with the December 31, 2018 valuation, the Board has adopted benefit weighted mortality tables with the generational mortality projections.

- Other Risks

In addition to longevity, the valuation includes a variety of other assumptions that are unlikely to match future experience exactly. One example is projected salary scales over time. As salary is central to the determination of benefits paid in retirement, deviations from the projected salary scales could have a material impact on the benefits anticipated for each member. Examples of demographic assumptions include retirement, termination and disability assumptions, and will likely vary in significance for different groups (for example, disability assumptions are typically more significant for Safety groups).

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the employers have a proven track-record of making the Actuarially Determined Contributions based on the Board's Actuarial Funding Policy, so contribution risk is minimal.

Evaluation of Historical Trends

Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- The funded percentage on the Valuation Value of Assets basis has increased from 78.5% to 91.8%. This is primarily due to contributions made to amortize the UAAL (i.e., amortizing each layer of UAAL over 18 years as a level percentage of pay). For a more detailed history see *Section 2, Subsection G, Funded Status* starting on page 45.
- The average geometric investment return on the Valuation Value of Assets over the last 10 years was 6.90%. This includes a high of 11.40% return and a low of 2.24%. The average over the last 5 years 6.81%. For more details see the Investment Return table in *Section 2, Subsection B* on page 27.

Section 2: Actuarial Valuation Results

- The primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption change in 2012 changed the discount rate from 7.75% to 7.25% and updated mortality tables, adding \$567 million in unfunded liability. The assumption change in 2015 changed the discount rate from 7.25% to 7.00% and updated mortality tables, adding \$114 million in unfunded liability. For more details on the unfunded liability changes see *Section 3, Exhibit I, Table of Amortization Bases* starting on page 89.
- The plan's funding policy effectively deals with these unfunded liabilities over time. This can be seen most clearly in *Section 3, Exhibit J, Projection of UAAL Balances and Payments* provided on pages 103 and 104.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.94 to 0.99. This ratio has fluctuated between 0.92 and 0.99 during the last 10 years. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative for understanding plan sensitivity to particular risks. For more details see *Section 2, Subsection A, Member Data* on page 18.

As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities. Over the past year, benefits paid were \$58 million more than contributions received. Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return. However, the plan currently has a relatively low level of negative cash flow and is relatively well funded (at a 91.8% funded ratio). For more details on historical cash flows see the Comparison of Contributions Made with Benefits in *Section 2, Subsection B* on page 22.

A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in *Section 2, Subsection I, Volatility Ratios* on page 48.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Total Plan

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	10,099	10,075	0.2%
• Average age	46.3	46.3	0.0
• Average years of service	10.2	10.1	0.1
• Total projected compensation ¹	\$990,041,699	\$937,531,264	5.6%
• Average projected compensation	\$98,034	\$93,055	5.4%
• Account balances	\$1,257,434,515	\$1,173,885,852	7.1%
• Total active vested members	6,563	6,334	3.6%
Inactive vested members:²			
• Number	3,591	3,638	-1.3%
• Average Age	46.7	46.4	0.3
Retired members:²			
• Number in pay status	7,655	7,395	3.5%
• Average age	70.8	70.7	0.1
• Average monthly benefit	\$4,361	\$4,264	2.3%
Disabled members:²			
• Number in pay status ³	896	907	-1.2%
• Average age	67.4	66.7	0.7
• Average monthly benefit	\$5,194	\$5,029	3.3%
Beneficiaries:²			
• Number in pay status	1,467	1,435	2.2%
• Average age	72.8	72.7	0.1
• Average monthly benefit	\$2,882	\$2,773	3.9%

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

² Includes members from terminated employers.

³ For 2020, includes 742 members receiving a service-connected disability and 154 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 1

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	431	465	-7.3%
• Average age	51.3	51.3	0.0
• Average years of service	18.7	18.4	0.3
• Total projected compensation ¹	\$55,178,789	\$56,757,787	-2.8%
• Average projected compensation	\$128,025	\$122,060	4.9%
• Account balances	\$76,464,864	\$74,913,765	2.1%
• Total active vested members	430	462	-6.9%
Inactive vested members:²			
• Number	204	214	-4.7%
• Average Age	52.6	52.5	0.1
Retired members:²			
• Number in pay status	2,257	2,298	-1.8%
• Average age	75.7	75.4	0.3
• Average monthly benefit	\$4,689	\$4,558	2.9%
Disabled members:²			
• Number in pay status ³	234	239	-2.1%
• Average age	73.8	73.0	0.8
• Average monthly benefit	\$3,215	\$3,110	3.4%
Beneficiaries:²			
• Number in pay status	664	669	-0.7%
• Average age	78.4	78.1	0.3
• Average monthly benefit	\$2,643	\$2,505	5.5%

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

² Includes members from terminated employers.

³ For 2020, includes 176 members receiving a service-connected disability and 58 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 2

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number ¹	0	0	N/A
• Average age	N/A	N/A	N/A
• Average years of service	N/A	N/A	N/A
• Total projected compensation	N/A	N/A	N/A
• Average projected compensation	N/A	N/A	N/A
• Account balances	N/A	N/A	N/A
• Total active vested members	N/A	N/A	N/A
Inactive vested members:²			
• Number	157	174	-9.8%
• Average Age	59.3	58.7	0.6
Retired members:²			
• Number in pay status	410	414	-1.0%
• Average age	76.2	75.7	0.5
• Average monthly benefit	\$916	\$883	3.7%
Disabled members:²			
• Number in pay status ³	36	39	-7.7%
• Average age	74.0	73.1	0.9
• Average monthly benefit	\$2,478	\$2,443	1.4%
Beneficiaries:²			
• Number in pay status	98	98	0.0%
• Average age	70.3	70.0	0.3
• Average monthly benefit	\$962	\$950	1.3%

¹ As of the December 31, 2005 valuation, there are no longer any Tier 2 active members as they have all transferred to Tier 3.

² Includes members from terminated employers.

³ For 2020, includes 19 members receiving a service-connected disability and 17 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 3

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	3,841	4,119	-6.7%
• Average age	52.2	51.8	0.4
• Average years of service	16.3	15.6	0.7
• Total projected compensation ¹	\$398,660,483	\$398,727,385	0.0%
• Average projected compensation	\$103,791	\$96,802	7.2%
• Account balances	\$605,469,128	\$580,415,201	4.3%
• Total active vested members	3,787	4,036	-6.2%
Inactive vested members:			
• Number	1,652	1,694	-2.5%
• Average Age	49.9	49.3	0.6
Retired members:			
• Number in pay status	3,568	3,329	7.2%
• Average age	69.0	68.6	0.4
• Average monthly benefit	\$3,087	\$2,969	4.0%
Disabled members:			
• Number in pay status ²	82	82	0.0%
• Average age	64.4	63.6	0.8
• Average monthly benefit	\$2,671	\$2,576	3.7%
Beneficiaries:			
• Number in pay status	250	232	7.8%
• Average age	63.0	62.5	0.5
• Average monthly benefit	\$1,776	\$1,702	4.3%

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

² For 2020, includes 25 members receiving a service-connected disability and 57 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 4 – 2% COLA

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	34	34	0.0%
• Average age	46.2	45.9	0.3
• Average years of service	2.6	2.0	0.6
• Total projected compensation ¹	\$2,861,175	\$2,582,621	10.8%
• Average projected compensation	\$84,152	\$75,959	10.8%
• Account balances	\$767,409	\$494,895	55.1%
• Total active vested members	4	1	300.0%
Inactive vested members:			
• Number	12	9	33.3%
• Average Age	44.7	41.7	3.0
Retired members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 4 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	206	176	17.0%
• Average age	42.2	41.1	1.1
• Average years of service	3.5	3.0	0.5
• Total projected compensation ¹	\$19,473,284	\$16,081,204	21.1%
• Average projected compensation	\$94,531	\$91,370	3.5%
• Account balances	\$6,954,336	\$4,781,957	45.4%
• Total active vested members	65	34	91.2%
Inactive vested members:			
• Number	32	31	3.2%
• Average Age	39.9	38.2	1.7
Retired members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 5 – 2% COLA

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	3,386	3,070	10.3%
• Average age	41.8	41.4	0.4
• Average years of service	3.0	2.5	0.5
• Total projected compensation ¹	\$263,041,653	\$223,993,737	17.4%
• Average projected compensation	\$77,685	\$72,962	6.5%
• Account balances	\$76,841,128	\$53,115,835	44.7%
• Total active vested members	635	225	182.2%
Inactive vested members:			
• Number	820	744	10.2%
• Average Age	40.1	39.6	0.5
Retired members:			
• Number in pay status	16	6	166.7%
• Average age	65.8	69.1	-3.3
• Average monthly benefit	\$621	\$399	55.6%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 5 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	714	735	-2.9%
• Average age	45.5	44.8	0.7
• Average years of service	6.2	5.3	0.9
• Total projected compensation ¹	\$59,988,995	\$58,647,309	2.3%
• Average projected compensation	\$84,018	\$79,792	5.3%
• Account balances	\$39,181,133	\$32,047,563	22.3%
• Total active vested members	568	520	9.2%
Inactive vested members:			
• Number	299	329	-9.1%
• Average Age	43.4	42.9	0.5
Retired members:			
• Number in pay status	23	14	64.3%
• Average age	66.5	65.4	1.1
• Average monthly benefit	\$788	\$667	18.1%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier A

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	753	808	-6.8%
• Average age	46.3	45.9	0.4
• Average years of service	17.6	16.9	0.7
• Total projected compensation ¹	\$111,238,091	\$112,306,815	-1.0%
• Average projected compensation	\$147,727	\$138,994	6.3%
• Account balances	\$392,256,798	\$382,520,855	2.5%
• Total active vested members	751	805	-6.7%
Inactive vested members:²			
• Number	255	281	-9.3%
• Average Age	47.1	46.5	0.6
Retired members:²			
• Number in pay status	1,373	1,329	3.3%
• Average age	66.4	66.4	0.0
• Average monthly benefit	\$8,279	\$8,117	2.0%
Disabled members:²			
• Number in pay status ³	532	537	-0.9%
• Average age	65.1	64.3	0.8
• Average monthly benefit	\$6,677	\$6,475	3.1%
Beneficiaries:²			
• Number in pay status	454	436	4.1%
• Average age	70.7	70.3	0.4
• Average monthly benefit	\$4,258	\$4,164	2.3%

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

² Includes members from terminated employers.

³ For 2020, includes 512 members receiving a service-connected disability and 20 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier C

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	117	122	-4.1%
• Average age	40.0	39.1	0.9
• Average years of service	10.6	9.7	0.9
• Total projected compensation ¹	\$15,059,295	\$14,675,942	2.6%
• Average projected compensation	\$128,712	\$120,295	7.0%
• Account balances	\$20,467,651	\$17,921,809	14.2%
• Total active vested members	116	120	-3.3%
Inactive vested members:			
• Number	73	73	0.0%
• Average Age	36.9	36.4	0.5
Retired members:			
• Number in pay status	6	3	100.0%
• Average age	56.6	61.2	-4.6
• Average monthly benefit	\$2,543	\$1,815	40.1%
Disabled members:			
• Number in pay status ²	10	9	11.1%
• Average age	43.1	43.4	-0.3
• Average monthly benefit	\$3,576	\$3,617	-1.1%
Beneficiaries:			
• Number in pay status	1	0	N/A
• Average age	50.1	N/A	N/A
• Average monthly benefit	\$2,021	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

² For 2020, includes 8 members receiving a service-connected disability and 2 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier D

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	137	130	5.4%
• Average age	34.9	34.4	0.5
• Average years of service	4.8	4.1	0.7
• Total projected compensation ¹	\$15,626,411	\$13,753,081	13.6%
• Average projected compensation	\$114,061	\$105,793	7.8%
• Account balances	\$12,283,460	\$9,172,851	33.9%
• Total active vested members	76	63	20.6%
Inactive vested members:			
• Number	30	29	3.4%
• Average Age	35.2	35.8	-0.6
Retired members:			
• Number in pay status	1	1	0.0%
• Average age	57.3	56.3	1.0
• Average monthly benefit	\$1,829	\$1,776	3.0%
Disabled members:			
• Number in pay status ²	2	1	100.0%
• Average age	59.7	57.2	2.5
• Average monthly benefit	\$2,754	\$2,225	23.8%
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

² For 2020, includes 2 member receiving a service-connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier E

Category	Year Ended December 31		Change From Prior Year
	2020	2019	
Active members in valuation:			
• Number	480	416	15.4%
• Average age	33.6	32.9	0.7
• Average years of service	3.6	3.1	0.5
• Total projected compensation ¹	\$48,913,524	\$40,005,384	22.3%
• Average projected compensation	\$101,903	\$96,167	6.0%
• Account balances	\$26,748,608	\$18,501,120	44.6%
• Total active vested members	131	68	92.6%
Inactive vested members:			
• Number	57	60	-5.0%
• Average Age	33.9	32.9	1.0
Retired members:			
• Number in pay status	1	1	0.0%
• Average age	62.2	61.2	1.0
• Average monthly benefit	\$1,058	\$1,037	2.0%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation

Total Plan

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	106	106	--	--	--	--	--	--	--	--
	\$66,422	\$66,422	--	--	--	--	--	--	--	--
25 - 29	633	569	64	--	--	--	--	--	--	--
	\$79,284	\$78,245	\$88,521	--	--	--	--	--	--	--
30 - 34	1,188	779	383	26	--	--	--	--	--	--
	\$86,997	\$82,211	\$95,293	\$108,164	--	--	--	--	--	--
35 - 39	1,353	616	462	235	40	--	--	--	--	--
	\$97,875	\$85,610	\$102,509	\$119,280	\$107,497	--	--	--	--	--
40 - 44	1,380	440	393	296	212	39	--	--	--	--
	\$102,579	\$86,472	\$100,052	\$119,098	\$116,250	\$110,079	--	--	--	--
45 - 49	1,468	400	311	253	286	205	13	--	--	--
	\$107,613	\$87,410	\$97,606	\$114,435	\$125,901	\$127,492	\$120,083	--	--	--
50 - 54	1,431	329	270	232	241	240	76	40	3	--
	\$103,762	\$82,435	\$93,866	\$105,659	\$120,976	\$117,536	\$125,697	\$107,340	\$98,522	--
55 - 59	1,281	271	245	168	218	195	91	72	21	--
	\$99,946	\$82,868	\$90,732	\$100,984	\$102,910	\$108,817	\$128,859	\$121,748	\$106,337	--
60 - 64	849	175	198	119	115	113	59	51	15	4
	\$96,412	\$77,802	\$88,224	\$101,783	\$101,143	\$105,158	\$117,201	\$128,925	\$89,435	\$77,976
65 - 69	329	49	96	52	39	50	18	14	8	3
	\$96,455	\$76,369	\$88,153	\$99,505	\$119,702	\$94,076	\$124,877	\$104,299	\$123,185	\$96,357
70 & over	81	13	18	20	17	6	2	4	--	1
	\$91,346	\$78,437	\$88,738	\$89,361	\$102,841	\$69,737	\$128,987	\$76,099	--	\$265,745
Total	10,099	3,747	2,440	1,401	1,168	848	259	181	47	8
	\$98,034	\$82,548	\$96,024	\$111,063	\$115,231	\$114,224	\$124,559	\$118,228	\$103,312	\$108,340

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 1 Non-Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
50 - 54	2	--	--	--	2	--	--	--	--	--
	\$154,223	--	--	--	\$154,223	--	--	--	--	--
55 - 59	1	--	1	--	--	--	--	--	--	--
	\$63,437	--	\$63,437	--	--	--	--	--	--	--
60 - 64	2	--	1	1	--	--	--	--	--	--
	\$103,847	--	\$96,940	\$110,754	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	5	--	2	1	2	--	--	--	--	--
	\$115,915	--	\$80,188	\$110,754	\$154,223	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 1 Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	1	--	1	--	--	--	--	--	--	--
	\$131,649	--	\$131,649	--	--	--	--	--	--	--
30 - 34	13	1	9	3	--	--	--	--	--	--
	\$132,555	\$72,400	\$135,349	\$144,226	--	--	--	--	--	--
35 - 39	40	6	13	17	4	--	--	--	--	--
	\$127,971	\$116,369	\$116,848	\$134,362	\$154,358	--	--	--	--	--
40 - 44	61	10	15	14	19	3	--	--	--	--
	\$133,858	\$134,018	\$141,424	\$135,828	\$133,213	\$90,377	--	--	--	--
45 - 49	71	9	12	14	18	17	1	--	--	--
	\$126,949	\$116,463	\$123,934	\$136,986	\$116,462	\$137,590	\$124,844	--	--	--
50 - 54	85	3	6	18	25	20	9	3	1	--
	\$131,975	\$126,020	\$162,454	\$128,833	\$132,688	\$137,552	\$112,211	\$100,260	\$167,121	--
55 - 59	80	--	6	19	19	19	6	10	1	--
	\$126,432	--	\$166,190	\$120,696	\$110,050	\$128,253	\$107,575	\$145,920	\$191,829	--
60 - 64	53	2	8	10	7	10	7	7	--	2
	\$119,457	\$129,882	\$124,539	\$109,059	\$133,368	\$118,591	\$109,892	\$135,353	--	\$74,167
65 - 69	18	--	3	3	7	2	--	1	--	2
	\$124,022	--	\$107,086	\$127,285	\$154,896	\$119,481	--	\$92,590	--	\$56,732
70 & over	4	--	--	1	2	--	--	--	--	1
	\$137,702	--	--	\$58,738	\$113,162	--	--	--	--	\$265,745
Total	426	31	73	99	101	71	23	21	2	5
	\$128,167	\$122,477	\$133,792	\$128,077	\$127,694	\$129,900	\$110,845	\$133,335	\$179,475	\$105,509

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 3 Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	2	--	2	--	--	--	--	--	--	--
	\$54,165	--	\$54,165	--	--	--	--	--	--	--
30 - 34	79	9	59	11	--	--	--	--	--	--
	\$82,632	\$97,102	\$81,012	\$79,483	--	--	--	--	--	--
35 - 39	303	22	122	132	27	--	--	--	--	--
	\$103,657	\$99,254	\$110,478	\$101,448	\$87,221	--	--	--	--	--
40 - 44	514	23	131	210	125	25	--	--	--	--
	\$107,224	\$119,498	\$113,054	\$111,224	\$96,529	\$85,254	--	--	--	--
45 - 49	626	27	119	191	169	112	8	--	--	--
	\$108,394	\$119,555	\$101,992	\$105,576	\$114,562	\$108,878	\$96,137	--	--	--
50 - 54	771	17	131	191	169	181	49	31	2	--
	\$104,127	\$101,494	\$97,941	\$99,838	\$110,589	\$107,644	\$109,492	\$96,462	\$64,223	--
55 - 59	760	19	104	142	180	158	79	59	19	--
	\$102,330	\$109,369	\$91,069	\$97,057	\$98,485	\$101,102	\$127,202	\$115,019	\$100,172	--
60 - 64	510	7	84	106	105	101	47	43	15	2
	\$102,488	\$106,106	\$93,564	\$101,187	\$98,497	\$103,020	\$111,462	\$126,744	\$89,435	\$81,785
65 - 69	214	3	51	44	28	48	18	13	8	1
	\$100,818	\$59,572	\$94,764	\$98,480	\$106,748	\$93,018	\$124,877	\$105,199	\$123,185	\$175,607
70 & over	62	3	13	19	15	6	2	4	--	--
	\$92,775	\$99,970	\$93,917	\$90,973	\$101,464	\$69,737	\$128,987	\$76,099	--	--
Total	3,841	130	816	1,046	818	631	203	150	44	3
	\$103,791	\$108,144	\$99,912	\$102,702	\$103,976	\$103,125	\$117,870	\$112,656	\$99,062	\$113,059

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 4 – 2% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	1	1	--	--	--	--	--	--	--	--
	\$73,707	\$73,707	--	--	--	--	--	--	--	--
25 - 29	3	3	--	--	--	--	--	--	--	--
	\$67,133	\$67,133	--	--	--	--	--	--	--	--
30 - 34	5	5	--	--	--	--	--	--	--	--
	\$71,396	\$71,396	--	--	--	--	--	--	--	--
35 - 39	2	2	--	--	--	--	--	--	--	--
	\$87,506	\$87,506	--	--	--	--	--	--	--	--
40 - 44	3	3	--	--	--	--	--	--	--	--
	\$83,991	\$83,991	--	--	--	--	--	--	--	--
45 - 49	4	3	1	--	--	--	--	--	--	--
	\$83,108	\$69,519	\$123,875	--	--	--	--	--	--	--
50 - 54	8	8	--	--	--	--	--	--	--	--
	\$101,287	\$101,287	--	--	--	--	--	--	--	--
55 - 59	5	3	2	--	--	--	--	--	--	--
	\$67,116	\$61,674	\$75,279	--	--	--	--	--	--	--
60 - 64	1	1	--	--	--	--	--	--	--	--
	\$106,724	\$106,724	--	--	--	--	--	--	--	--
65 - 69	2	1	1	--	--	--	--	--	--	--
	\$108,542	\$106,471	\$110,613	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	34	30	4	--	--	--	--	--	--	--
	\$84,152	\$82,538	\$96,261	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 4 – 3% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	3	3	--	--	--	--	--	--	--	--
	\$74,926	\$74,926	--	--	--	--	--	--	--	--
25 - 29	19	16	3	--	--	--	--	--	--	--
	\$78,378	\$73,993	\$101,761	--	--	--	--	--	--	--
30 - 34	40	30	10	--	--	--	--	--	--	--
	\$90,416	\$87,129	\$100,277	--	--	--	--	--	--	--
35 - 39	36	24	12	--	--	--	--	--	--	--
	\$106,943	\$108,846	\$103,137	--	--	--	--	--	--	--
40 - 44	32	28	4	--	--	--	--	--	--	--
	\$100,920	\$99,750	\$109,111	--	--	--	--	--	--	--
45 - 49	26	18	8	--	--	--	--	--	--	--
	\$90,490	\$86,580	\$99,290	--	--	--	--	--	--	--
50 - 54	19	14	5	--	--	--	--	--	--	--
	\$99,587	\$99,851	\$98,849	--	--	--	--	--	--	--
55 - 59	21	11	10	--	--	--	--	--	--	--
	\$93,340	\$87,889	\$99,337	--	--	--	--	--	--	--
60 - 64	9	5	4	--	--	--	--	--	--	--
	\$85,025	\$60,791	\$115,318	--	--	--	--	--	--	--
65 - 69	1	1	--	--	--	--	--	--	--	--
	\$93,013	\$93,013	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	206	150	56	--	--	--	--	--	--	--
	\$94,531	\$91,653	\$102,239	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 5 – 2% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	75	75	--	--	--	--	--	--	--	--
	\$56,351	\$56,351	--	--	--	--	--	--	--	--
25 - 29	397	365	32	--	--	--	--	--	--	--
	\$70,305	\$69,774	\$76,359	--	--	--	--	--	--	--
30 - 34	669	569	100	--	--	--	--	--	--	--
	\$77,949	\$77,039	\$83,126	--	--	--	--	--	--	--
35 - 39	588	472	116	--	--	--	--	--	--	--
	\$82,359	\$80,605	\$89,494	--	--	--	--	--	--	--
40 - 44	429	329	100	--	--	--	--	--	--	--
	\$79,469	\$79,363	\$79,816	--	--	--	--	--	--	--
45 - 49	381	309	72	--	--	--	--	--	--	--
	\$81,184	\$81,090	\$81,588	--	--	--	--	--	--	--
50 - 54	310	254	55	1	--	--	--	--	--	--
	\$77,312	\$77,365	\$76,231	\$123,293	--	--	--	--	--	--
55 - 59	274	221	52	1	--	--	--	--	--	--
	\$79,459	\$78,972	\$81,948	\$57,798	--	--	--	--	--	--
60 - 64	190	152	38	--	--	--	--	--	--	--
	\$74,567	\$74,814	\$73,580	--	--	--	--	--	--	--
65 - 69	62	42	18	2	--	--	--	--	--	--
	\$74,209	\$76,665	\$71,814	\$44,200	--	--	--	--	--	--
70 & over	11	9	2	--	--	--	--	--	--	--
	\$72,623	\$77,534	\$50,525	--	--	--	--	--	--	--
Total	3,386	2,797	585	4	--	--	--	--	--	--
	\$77,685	\$76,916	\$81,431	\$67,373	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 5 – 3% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	2	2	--	--	--	--	--	--	--	--
	\$54,640	\$54,640	--	--	--	--	--	--	--	--
25 - 29	21	16	5	--	--	--	--	--	--	--
	\$66,897	\$67,115	\$66,202	--	--	--	--	--	--	--
30 - 34	102	23	78	1	--	--	--	--	--	--
	\$79,623	\$77,388	\$80,426	\$68,395	--	--	--	--	--	--
35 - 39	138	35	103	--	--	--	--	--	--	--
	\$87,808	\$88,952	\$87,419	--	--	--	--	--	--	--
40 - 44	122	24	98	--	--	--	--	--	--	--
	\$86,901	\$92,292	\$85,581	--	--	--	--	--	--	--
45 - 49	95	18	76	1	--	--	--	--	--	--
	\$92,028	\$95,968	\$91,165	\$86,657	--	--	--	--	--	--
50 - 54	76	20	55	1	--	--	--	--	--	--
	\$82,673	\$83,616	\$81,505	\$128,059	--	--	--	--	--	--
55 - 59	67	7	60	--	--	--	--	--	--	--
	\$81,415	\$78,384	\$81,769	--	--	--	--	--	--	--
60 - 64	62	5	56	1	--	--	--	--	--	--
	\$77,528	\$90,686	\$76,604	\$63,440	--	--	--	--	--	--
65 - 69	25	2	23	--	--	--	--	--	--	--
	\$81,969	\$71,987	\$82,837	--	--	--	--	--	--	--
70 & over	4	1	3	--	--	--	--	--	--	--
	\$74,319	\$21,969	\$91,768	--	--	--	--	--	--	--
Total	714	153	557	4	--	--	--	--	--	--
	\$84,018	\$84,047	\$83,992	\$86,638	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier A Non-Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
40 - 44	3	--	2	--	1	--	--	--	--	--
	\$144,211	--	\$139,837	--	\$152,959	--	--	--	--	--
45 - 49	2	--	--	--	--	2	--	--	--	--
	\$145,699	--	--	--	--	\$145,699	--	--	--	--
50 - 54	5	--	1	--	--	1	--	3	--	--
	\$151,633	--	\$137,454	--	--	\$153,167	--	\$155,847	--	--
55 - 59	1	--	--	--	--	--	--	1	--	--
	\$151,099	--	--	--	--	--	--	\$151,099	--	--
60 - 64	1	--	--	--	--	--	1	--	--	--
	\$225,282	--	--	--	--	--	\$225,282	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	12	--	3	--	1	3	1	4	--	--
	\$154,881	--	\$139,042	--	\$152,959	\$148,188	\$225,282	\$154,660	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier A Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
30 - 34	30	7	19	4	--	--	--	--	--	--
	\$127,082	\$120,815	\$128,145	\$132,999	--	--	--	--	--	--
35 - 39	122	11	33	69	9	--	--	--	--	--
	\$142,387	\$133,510	\$133,795	\$147,245	\$147,497	--	--	--	--	--
40 - 44	161	4	20	60	66	11	--	--	--	--
	\$145,675	\$176,224	\$131,504	\$141,014	\$147,988	\$171,873	--	--	--	--
45 - 49	226	5	7	37	99	74	4	--	--	--
	\$150,624	\$182,744	\$167,517	\$146,650	\$146,972	\$152,853	\$166,786	--	--	--
50 - 54	129	1	7	17	45	38	18	3	--	--
	\$154,575	\$151,017	\$151,045	\$138,704	\$151,999	\$153,183	\$176,551	\$178,318	--	--
55 - 59	53	--	2	5	19	18	6	2	1	--
	\$149,341	--	\$121,786	\$141,548	\$137,693	\$156,024	\$171,959	\$184,710	\$137,981	--
60 - 64	13	1	1	1	3	2	4	1	--	--
	\$144,615	\$104,205	\$147,393	\$121,513	\$118,551	\$145,947	\$170,406	\$177,720	--	--
65 - 69	7	--	--	3	4	--	--	--	--	--
	\$138,013	--	--	\$123,635	\$148,796	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	741	29	89	196	245	143	32	6	1	--
	\$147,611	\$144,419	\$135,966	\$143,556	\$147,151	\$154,707	\$173,701	\$180,349	\$137,981	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier C

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
30 - 34	36	--	29	7	--	--	--	--	--	--
	\$126,500	--	\$125,831	\$129,271	--	--	--	--	--	--
35 - 39	34	--	17	17	--	--	--	--	--	--
	\$127,317	--	\$125,484	\$129,151	--	--	--	--	--	--
40 - 44	22	--	9	12	1	--	--	--	--	--
	\$126,103	--	\$123,664	\$127,798	\$127,722	--	--	--	--	--
45 - 49	13	--	3	10	--	--	--	--	--	--
	\$132,727	--	\$122,949	\$135,660	--	--	--	--	--	--
50 - 54	7	--	3	4	--	--	--	--	--	--
	\$128,713	--	\$128,504	\$128,871	--	--	--	--	--	--
55 - 59	3	--	2	1	--	--	--	--	--	--
	\$177,848	--	\$204,520	\$124,504	--	--	--	--	--	--
60 - 64	2	1	1	--	--	--	--	--	--	--
	\$121,119	\$120,434	\$121,804	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	117	1	64	51	1	--	--	--	--	--
	\$128,712	\$120,434	\$127,821	\$130,012	\$127,722	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier D

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	2	2	--	--	--	--	--	--	--	--
	\$126,201	\$126,201	--	--	--	--	--	--	--	--
25 - 29	32	32	--	--	--	--	--	--	--	--
	\$111,412	\$111,412	--	--	--	--	--	--	--	--
30 - 34	44	21	23	--	--	--	--	--	--	--
	\$113,722	\$120,152	\$107,852	--	--	--	--	--	--	--
35 - 39	36	13	23	--	--	--	--	--	--	--
	\$114,994	\$118,115	\$113,229	--	--	--	--	--	--	--
40 - 44	9	3	6	--	--	--	--	--	--	--
	\$112,863	\$122,327	\$108,130	--	--	--	--	--	--	--
45 - 49	8	1	7	--	--	--	--	--	--	--
	\$116,516	\$121,422	\$115,815	--	--	--	--	--	--	--
50 - 54	3	--	3	--	--	--	--	--	--	--
	\$106,805	--	\$106,805	--	--	--	--	--	--	--
55 - 59	2	1	1	--	--	--	--	--	--	--
	\$121,647	\$153,671	\$89,623	--	--	--	--	--	--	--
60 - 64	1	--	1	--	--	--	--	--	--	--
	\$153,671	--	\$153,671	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	137	73	64	--	--	--	--	--	--	--
	\$114,061	\$116,690	\$111,063	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier E

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	23	23	--	--	--	--	--	--	--	--
	\$93,660	\$93,660	--	--	--	--	--	--	--	--
25 - 29	158	137	21	--	--	--	--	--	--	--
	\$97,312	\$95,108	\$111,696	--	--	--	--	--	--	--
30 - 34	170	114	56	--	--	--	--	--	--	--
	\$102,866	\$97,729	\$113,325	--	--	--	--	--	--	--
35 - 39	54	31	23	--	--	--	--	--	--	--
	\$101,660	\$93,667	\$112,434	--	--	--	--	--	--	--
40 - 44	24	16	8	--	--	--	--	--	--	--
	\$101,208	\$94,785	\$114,054	--	--	--	--	--	--	--
45 - 49	16	10	6	--	--	--	--	--	--	--
	\$109,977	\$110,167	\$109,661	--	--	--	--	--	--	--
50 - 54	16	12	4	--	--	--	--	--	--	--
	\$112,752	\$111,293	\$117,128	--	--	--	--	--	--	--
55 - 59	14	9	5	--	--	--	--	--	--	--
	\$122,593	\$119,144	\$128,803	--	--	--	--	--	--	--
60 - 64	5	1	4	--	--	--	--	--	--	--
	\$139,615	\$152,344	\$136,432	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	480	353	127	--	--	--	--	--	--	--
	\$101,903	\$97,470	\$114,224	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit

Total Plan

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	17	2	8	1	4	1	1	--	--	--
	\$756	\$267	\$374	\$1,973	\$1,360	\$305	\$1,603	--	--	--
30 - 34	15	3	8	--	2	--	2	--	--	--
	\$1,424	\$1,858	\$1,471	--	\$1,532	--	\$475	--	--	--
35 - 39	23	5	9	--	3	4	2	--	--	--
	\$1,972	\$3,128	\$2,115	--	\$1,558	\$1,044	\$911	--	--	--
40 - 44	41	11	11	8	4	1	5	--	1	--
	\$2,859	\$3,197	\$3,946	\$3,552	\$1,006	\$742	\$873	--	\$1,114	--
45 - 49	73	28	11	11	15	5	3	--	--	--
	\$3,251	\$3,659	\$2,338	\$4,048	\$3,750	\$849	\$1,374	--	--	--
50 - 54	410	308	45	15	20	9	13	--	--	--
	\$4,730	\$5,039	\$5,393	\$3,733	\$2,846	\$1,923	\$1,120	--	--	--
55 - 59	855	421	330	37	28	27	10	--	1	1
	\$4,566	\$3,849	\$5,579	\$5,851	\$3,123	\$3,922	\$2,803	--	\$961	\$3,518
60 - 64	1,379	472	507	282	48	28	28	8	5	1
	\$4,169	\$3,370	\$4,342	\$5,562	\$3,524	\$3,850	\$2,436	\$4,132	\$2,133	\$437
65 - 69	1,843	470	588	440	240	46	28	15	8	8
	\$4,372	\$3,193	\$4,332	\$5,412	\$5,369	\$3,370	\$3,734	\$3,176	\$2,296	\$1,936
70 - 74	2,122	199	526	548	520	198	66	30	21	14
	\$4,404	\$2,531	\$3,717	\$5,362	\$5,628	\$2,969	\$3,485	\$3,313	\$2,972	\$2,992
75 - 79	1,449	22	142	314	466	288	115	49	31	22
	\$4,295	\$1,557	\$2,996	\$3,791	\$5,118	\$5,244	\$2,921	\$3,478	\$3,202	\$3,276
80 - 84	844	7	17	87	192	249	152	79	37	24
	\$3,936	\$3,062	\$2,004	\$2,820	\$3,796	\$4,658	\$4,520	\$3,163	\$2,793	\$3,824
85 - 89	538	--	5	15	50	111	157	96	71	33
	\$3,591	--	\$2,365	\$2,442	\$2,283	\$4,001	\$4,579	\$3,430	\$2,371	\$3,292
90 & Over	409	--	1	2	4	21	74	99	110	98
	\$3,323	--	\$830	\$1,001	\$2,218	\$2,869	\$3,696	\$4,077	\$2,946	\$2,917
Total	10,018	1,948	2,208	1,760	1,596	988	656	376	285	201
	\$4,219	\$3,585	\$4,240	\$4,949	\$4,912	\$4,208	\$3,771	\$3,546	\$2,767	\$3,083

Note: Total retired benefit \$42,267,178, average age 70.8, and average years of retirement 14.3. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 1

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	2	--	2	--	--	--	--	--	--	--
	\$127	--	\$127	--	--	--	--	--	--	--
30 - 34	6	1	3	--	--	--	2	--	--	--
	\$892	\$874	\$1,176	--	--	--	\$475	--	--	--
35 - 39	3	--	1	--	--	1	1	--	--	--
	\$1,030	--	\$1,123	--	--	\$1,493	\$475	--	--	--
40 - 44	5	--	1	--	--	--	3	--	1	--
	\$1,004	--	\$1,408	--	--	--	\$832	--	\$1,114	--
45 - 49	4	1	--	--	1	1	1	--	--	--
	\$1,405	\$874	--	--	\$2,673	\$1,422	\$652	--	--	--
50 - 54	27	16	2	--	2	2	5	--	--	--
	\$1,950	\$2,031	\$3,610	--	\$1,392	\$1,984	\$1,236	--	--	--
55 - 59	98	61	22	4	3	5	2	--	1	--
	\$2,935	\$3,761	\$1,670	\$1,930	\$653	\$1,552	\$1,543	--	\$961	--
60 - 64	258	75	103	46	11	5	11	2	4	1
	\$3,554	\$3,789	\$4,053	\$3,036	\$2,468	\$2,776	\$1,918	\$3,197	\$1,705	\$437
65 - 69	454	45	154	161	53	13	8	9	5	6
	\$4,456	\$3,521	\$5,483	\$4,889	\$2,482	\$3,052	\$3,293	\$2,134	\$1,683	\$1,326
70 - 74	667	25	84	190	220	94	25	11	10	8
	\$4,769	\$2,992	\$5,394	\$6,433	\$4,780	\$2,484	\$2,786	\$3,213	\$2,385	\$2,076
75 - 79	555	2	14	77	226	123	60	26	17	10
	\$4,610	\$777	\$4,818	\$5,478	\$5,927	\$3,688	\$2,243	\$2,602	\$2,874	\$2,339
80 - 84	430	2	2	9	83	159	87	52	22	14
	\$4,232	\$1,951	\$773	\$3,640	\$6,049	\$5,148	\$2,857	\$2,380	\$1,948	\$3,261
85 - 89	325	--	--	1	13	62	108	72	51	18
	\$3,756	--	--	\$1,090	\$5,008	\$5,191	\$4,655	\$2,671	\$1,948	\$2,122
90 & Over	321	--	--	--	1	13	56	87	94	70
	\$3,152	--	--	--	\$1,383	\$3,893	\$4,442	\$3,842	\$2,496	\$2,031
Total	3,155	228	388	488	613	478	369	259	205	127
	\$4,149	\$3,449	\$4,727	\$5,353	\$5,099	\$4,072	\$3,430	\$3,007	\$2,277	\$2,161

Note: Total retired benefit \$13,091,013, average age 76.1, and average years of retirement 20.0. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 2

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
35 - 39	2	--	--	--	--	2	--	--	--	--
40 - 44	\$913	--	--	--	--	\$913	--	--	--	--
45 - 49	2	--	--	--	--	1	1	--	--	--
50 - 54	\$632	--	--	--	--	\$742	\$522	--	--	--
55 - 59	7	--	--	--	2	4	1	--	--	--
60 - 64	\$934	--	--	--	\$855	\$706	\$2,005	--	--	--
65 - 69	12	1	--	1	--	4	6	--	--	--
70 - 74	\$1,193	\$535	--	\$710	--	\$1,777	\$994	--	--	--
75 - 79	19	11	5	--	--	1	2	--	--	--
80 - 84	\$634	\$309	\$179	--	--	\$3,724	\$2,014	--	--	--
85 - 89	53	18	13	11	2	4	5	--	--	--
90 & Over	\$719	\$660	\$482	\$806	\$1,595	\$1,581	\$317	--	--	--
Total	58	10	7	14	15	7	4	1	--	--
	\$1,002	\$727	\$298	\$951	\$778	\$2,022	\$1,765	\$2,590	--	--
	108	4	10	21	33	32	6	2	--	--
	\$993	\$1,183	\$246	\$1,091	\$939	\$962	\$2,078	\$1,439	--	--
	99	--	--	17	23	40	16	3	--	--
	\$1,004	--	--	\$623	\$1,540	\$891	\$811	\$1,577	--	--
	77	--	--	3	27	31	14	2	--	--
	\$1,320	--	--	\$1,169	\$1,165	\$1,492	\$1,148	\$2,182	--	--
	79	--	1	--	13	33	24	4	4	--
	\$1,175	--	\$1,033	--	\$855	\$1,588	\$879	\$1,067	\$723	--
	28	--	--	--	2	8	15	2	1	--
	\$915	--	--	--	\$210	\$1,206	\$948	\$349	\$632	--
Total	544	44	36	67	117	167	94	14	5	--
	\$1,027	\$632	\$354	\$894	\$1,077	\$1,266	\$1,042	\$1,395	\$705	--

Note: Total retired benefit \$558,880, average age 75.0, and average years of retirement 18.9. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 3

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	10	2	6	1	1	--	--	--	--	--
	\$601	\$267	\$457	\$1,973	\$770	--	--	--	--	--
30 - 34	6	1	4	--	1	--	--	--	--	--
	\$650	\$118	\$423	--	\$2,089	--	--	--	--	--
35 - 39	8	--	4	--	3	1	--	--	--	--
	\$1,070	--	\$757	--	\$1,558	\$857	--	--	--	--
40 - 44	10	2	2	2	4	--	--	--	--	--
	\$1,531	\$1,216	\$2,502	\$1,927	\$1,006	--	--	--	--	--
45 - 49	14	4	6	2	2	--	--	--	--	--
	\$1,460	\$695	\$2,071	\$1,171	\$1,444	--	--	--	--	--
50 - 54	97	80	7	3	5	2	--	--	--	--
	\$1,839	\$1,906	\$2,285	\$1,357	\$819	\$904	--	--	--	--
55 - 59	369	251	104	6	6	1	--	--	--	1
	\$2,709	\$3,012	\$2,021	\$2,997	\$1,695	\$2,133	--	--	--	\$3,518
60 - 64	694	329	270	84	10	1	--	--	--	--
	\$2,942	\$3,245	\$2,915	\$1,918	\$2,429	\$1,961	--	--	--	--
65 - 69	981	380	388	155	56	2	--	--	--	--
	\$3,293	\$3,211	\$3,574	\$3,284	\$1,975	\$2,075	--	--	--	--
70 - 74	956	161	416	265	103	10	1	--	--	--
	\$3,257	\$2,573	\$3,408	\$3,824	\$2,471	\$1,180	\$2,336	--	--	--
75 - 79	507	18	123	201	148	17	--	--	--	--
	\$2,927	\$1,741	\$2,777	\$3,316	\$2,814	\$1,636	--	--	--	--
80 - 84	194	4	14	68	80	27	--	1	--	--
	\$2,387	\$3,516	\$1,980	\$2,704	\$2,317	\$1,866	--	\$1,660	--	--
85 - 89	50	--	4	14	24	8	--	--	--	--
	\$1,996	--	\$2,698	\$2,539	\$1,581	\$1,941	--	--	--	--
90 & Over	4	--	1	2	1	--	--	--	--	--
	\$2,475	--	\$830	\$1,001	\$7,068	--	--	--	--	--
Total	3,900	1,232	1,349	803	444	69	1	1	--	1
	\$2,993	\$2,972	\$3,131	\$3,240	\$2,399	\$1,687	\$2,336	\$1,660	--	\$3,518

Note: Total retired benefit \$11,675,887, average age 68.5, and average years of retirement 8.4.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 5

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
50 - 54	1	1	--	--	--	--	--	--	--	--
	\$287	\$287	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
	\$1,696	\$1,696	--	--	--	--	--	--	--	--
60 - 64	13	13	--	--	--	--	--	--	--	--
	\$554	\$554	--	--	--	--	--	--	--	--
65 - 69	15	15	--	--	--	--	--	--	--	--
	\$750	\$750	--	--	--	--	--	--	--	--
70 - 74	6	6	--	--	--	--	--	--	--	--
	\$759	\$759	--	--	--	--	--	--	--	--
75 - 79	2	2	--	--	--	--	--	--	--	--
	\$684	\$684	--	--	--	--	--	--	--	--
80 - 84	--	--	--	--	--	--	--	--	--	--
85 - 89	--	--	--	--	--	--	--	--	--	--
90 & Over	--	--	--	--	--	--	--	--	--	--
Total	39	39	--	--	--	--	--	--	--	--
	\$719	\$719	--	--	--	--	--	--	--	--

Note: Total retired benefit \$28,047, average age 66.2, and average years of retirement 1.3.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit (continued)

Safety Tier A and Tier C

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	5	--	--	--	3	1	1	--	--	--
	\$1,316	--	--	--	\$1,557	\$305	\$1,603	--	--	--
30 - 34	3	1	1	--	1	--	--	--	--	--
	\$4,036	\$4,580	\$6,553	--	\$974	--	--	--	--	--
35 - 39	10	5	4	--	--	--	1	--	--	--
	\$3,187	\$3,128	\$3,720	--	--	--	\$1,347	--	--	--
40 - 44	24	9	8	6	--	--	1	--	--	--
	\$3,985	\$3,638	\$4,625	\$4,093	--	--	\$1,347	--	--	--
45 - 49	48	23	5	9	10	--	1	--	--	--
	\$4,265	\$4,295	\$2,659	\$4,688	\$4,899	--	\$1,466	--	--	--
50 - 54	273	210	36	11	13	1	2	--	--	--
	\$6,204	\$6,505	\$6,097	\$4,656	\$3,849	\$4,427	\$1,208	--	--	--
55 - 59	365	94	199	27	19	20	6	--	--	--
	\$7,115	\$6,643	\$8,006	\$7,066	\$3,964	\$4,614	\$3,486	--	--	--
60 - 64	359	35	121	141	25	18	12	6	1	--
	\$7,636	\$6,167	\$8,187	\$8,928	\$4,581	\$4,757	\$3,794	\$4,444	\$3,846	--
65 - 69	335	20	39	110	116	24	16	5	3	2
	\$8,168	\$5,186	\$8,058	\$9,745	\$8,920	\$4,043	\$4,447	\$5,169	\$3,318	\$3,764
70 - 74	385	3	16	72	164	62	34	17	11	6
	\$7,632	\$1,812	\$5,097	\$9,438	\$9,693	\$5,029	\$4,282	\$3,597	\$3,506	\$4,214
75 - 79	286	--	5	19	69	108	39	20	14	12
	\$7,273	--	\$3,276	\$4,810	\$8,606	\$9,196	\$4,828	\$4,903	\$3,601	\$4,057
80 - 84	143	1	1	7	2	32	51	24	15	10
	\$6,554	\$3,467	\$4,797	\$3,599	\$5,007	\$7,645	\$8,282	\$5,003	\$4,032	\$4,612
85 - 89	84	--	--	--	--	8	25	20	16	15
	\$6,175	--	--	--	--	\$6,788	\$7,803	\$6,637	\$4,130	\$4,697
90 & Over	56	--	--	--	--	--	3	10	15	28
	\$5,564	--	--	--	--	--	\$3,506	\$6,863	\$5,916	\$5,132
Total	2,376	401	435	402	422	274	192	102	75	73
	\$7,115	\$6,162	\$7,568	\$8,546	\$8,348	\$6,874	\$5,769	\$5,227	\$4,241	\$4,682

Note: Total retired benefit \$16,904,957, average age 66.8, and average years of retirement 15.8. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2020 by Age, Years of Retirement, and Average Monthly Benefit (continued)

Safety Tier D and Tier E

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
50 - 54	--	--	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
60 - 64	\$2,060	\$2,060	--	--	--	--	--	--	--	--
65 - 69	2	2	--	--	--	--	--	--	--	--
70 - 74	\$2,137	\$2,137	--	--	--	--	--	--	--	--
75 - 79	--	--	--	--	--	--	--	--	--	--
80 - 84	--	--	--	--	--	--	--	--	--	--
85 - 89	--	--	--	--	--	--	--	--	--	--
90 & Over	--	--	--	--	--	--	--	--	--	--
Total	4	4	--	--	--	--	--	--	--	--
	\$2,099	\$2,099	--	--	--	--	--	--	--	--

Note: Total retired benefit \$8,395, average age 59.7, and average years of retirement 2.0.

Section 3: Supplemental Information

Exhibit D: Reconciliation of Member Data

	Active Members	Inactive Vested Members ¹	Retired Members	Disabled Members	Beneficiaries	Total
Number as of December 31, 2019	10,075	3,638	7,395	907	1,435	23,450
• New members	699	82	0	0	102	883
• Terminations – with vested rights	(218)	218	0	0	0	0
• Contribution refunds	(115)	(217)	0	0	0	(332)
• Retirements	(345)	(90)	435	0	0	0
• New disabilities	(8)	0	(5)	13	0	0
• Return to work	26	(26)	0	0	0	0
• Died with or without beneficiary	(11)	(9)	(172)	(24)	(70)	(286)
• Data adjustments	<u>(4)</u>	<u>(5)</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>(7)</u>
Number as of December 31, 2020	10,099	3,591	7,655	896	1,467	23,708

¹ Includes inactive members with member contributions on deposit.

Section 3: Supplemental Information

Exhibit E: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended December 31, 2020	Year Ended December 31, 2019
Net assets at market value at the beginning of the year	\$9,257,012,679	\$8,149,985,793
Contribution income:		
• Employer contributions	\$336,356,723	\$327,982,796
• Member contributions	113,494,191	108,487,711
• Less administrative expenses	<u>(10,749,625)</u>	<u>(10,200,473)</u>
<i>Net contribution income</i>	<i>\$439,101,289</i>	<i>\$426,270,034</i>
Investment income:		
• Interest, dividends and other income	\$130,660,576	\$175,593,436
• Asset appreciation	796,963,948	1,040,680,672
• Less investment and administrative fees	<u>(45,230,463)</u>	<u>(48,102,522)</u>
<i>Net investment income</i>	<i><u>\$882,394,061</u></i>	<i><u>\$1,168,171,586</u></i>
Total income available for benefits	\$1,321,495,350	\$1,594,441,620
Less benefit payments:		
• Benefits paid	\$(499,301,074)	\$(477,410,838)
• Refunds of contributions	(6,857,502)	(7,966,324)
• Adjustments, transfers or other expenses	<u>(2,111,589)</u>	<u>(2,037,572)</u>
<i>Net benefit payments</i>	<i><u>\$(508,270,165)</u></i>	<i><u>\$(487,414,734)</u></i>
Change in net assets at market value	\$813,225,183	\$1,107,026,886
Net assets at market value at the end of the year	\$10,070,237,862	\$9,257,012,679

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit F: Summary Statement of Plan Assets

	December 31, 2020	December 31, 2019
<i>Cash equivalents</i>	\$882,668,630	\$796,020,581
Accounts receivable:		
• Investment trades	\$10,046,173	\$20,892,694
• Investment income	19,538,597	3,319,093
• Employer and member contributions	11,012,709	11,114,037
• Additional contributions	<u>8,576,210</u>	<u>10,458,780</u>
<i>Total accounts receivable</i>	\$49,173,689	\$45,784,604
Investments:		
• Stocks	\$4,660,909,084	\$3,933,057,088
• Bonds	2,486,582,623	2,512,385,535
• Real estate	595,612,663	633,352,458
• Alternative investments and real assets	<u>1,879,367,126</u>	<u>1,812,805,921</u>
<i>Total investments at market value</i>	\$9,622,471,496	\$8,891,601,002
<i>Other assets</i>	<u>1,495,697</u>	<u>1,550,773</u>
Total assets	\$10,555,809,512	\$9,734,956,960
Accounts payable:		
• Investment trades	\$(11,230,649)	\$(21,286,088)
• Security lending	(260,297,271)	(250,497,084)
• Employer contributions unearned	(161,368,992)	(153,205,417)
• Other	<u>(51,676,739)</u>	<u>(52,955,694)</u>
Total accounts payable	\$(484,573,651)	\$(477,944,283)
Deferred inflows of resources	<u>(998,000)</u>	<u>0</u>
Net assets at market value	\$10,070,237,862	\$9,257,012,679
Net assets at actuarial value	\$9,678,508,253	\$9,144,580,232
Net assets at valuation value	\$9,662,282,926	\$9,128,668,718

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit G: Summary of Total Allocated Reserves

	December 31, 2020	December 31, 2019
• Member Deposits ¹	\$973,635,412	\$901,226,206
• Member Cost of Living ¹	503,099,601	471,545,778
• Employer Advance ^{1, 2}	2,759,386,818	2,507,971,167
• Employer Cost of Living ^{1, 2}	1,129,649,739	1,134,372,856
• Retired Members ^{1, 2}	3,735,883,052	3,621,507,748
• Retired Cost of Living ^{1, 2}	2,952,638,062	2,704,580,218
• Dollar Power Cost of Living Supplement Pre-Funding ¹	271,471	1,430,969
• Post Retirement Death Benefit ³	16,225,327	15,911,514
• Statutory Contingency (one percent) ³	0	0
• Additional One Percent Contingency Designation ³	0	0
• Contra Tracking Account ¹	<u>(2,392,281,230)</u>	<u>(2,213,966,222)</u>
Total Allocated Reserves	\$9,678,508,253	\$9,144,580,232
Total Deferred Return	<u>391,729,609</u>	<u>112,432,447</u>
Net Market Value	\$10,070,237,862	\$9,257,012,679

Note: Results may be slightly off due to rounding.

¹ Included in valuation value of assets.

² Both December 31, 2020 and December 31, 2019 information reflect a “true-up” of retired reserves.

³ Not included in valuation value of assets. See reference made on page 132 with respect to the payment of benefits out of this reserve.

Section 3: Supplemental Information

Exhibit H: Development of the Fund Through December 31, 2020

Year Ended December 31	Employer Contributions ¹	Member Contributions ¹	Administrative Expenses ²	Net Investment Return ³	Benefit Payments	Market Value of Assets at Year-End	Valuation Value of Assets at Year-End	Valuation Value as a Percent of Market Value
2011	\$200,388,994	\$61,575,376	N/A	\$88,042,268	\$324,874,379	\$5,052,289,458	\$5,426,719,066	107.4%
2012	212,321,325	73,361,712	N/A	668,138,997	351,530,368	5,654,581,124	5,482,257,062	97.0%
2013	235,017,452	72,373,254	N/A	870,984,744	374,638,978	6,458,317,596	5,907,416,432	91.5%
2014	293,760,413	78,257,665	N/A	473,522,261	394,947,705	6,908,910,230	6,557,496,101	94.9%
2015	323,720,270	85,360,637	N/A	65,495,657	406,904,366	6,976,582,428	7,136,801,380	102.3%
2016	307,457,143	89,240,172	\$8,486,463	493,874,242	420,148,018	7,438,519,504	7,606,997,530	102.3%
2017	314,836,561	96,466,906	9,146,115	987,415,981	437,511,788	8,390,581,049	8,179,891,191	97.5%
2018	325,117,103	103,541,529	9,337,053	(195,030,888)	464,885,947	8,149,985,793	8,650,178,226	106.1%
2019	327,982,796	108,487,711	10,200,473	1,168,171,586	487,414,734	9,257,012,679	9,128,668,718	98.6%
2020	336,356,723	113,494,191	10,749,625	882,394,059	508,270,165	10,070,237,862	9,662,282,926	95.9%

Note: Results may be slightly off due to rounding.

¹ Prior to 2017, employer contributions include “employer subvention of member contributions” and exclude “member subvention of employer contributions”.

² Prior to 2016, administrative expenses were shown as an offset to the net investment return.

³ On a market basis, net of investment fees beginning with the year ended December 31, 2016. Prior to 2016, shown net of investment fees and administrative expenses.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases

Cost Groups #1 and #2 – General County and Small Districts

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$785,069,153	15	\$209,514,007	2	\$110,599,758
Actuarial Loss	December 31, 2008	80,033,199	18	50,210,832	6	9,472,574
Actuarial Loss	December 31, 2009	165,041,323	18	114,019,100	7	18,756,386
Assumption Change	December 31, 2009	39,563,826	18	27,332,741	7	4,496,294
Depooling Implementation	December 31, 2009	(74,701,913)	18	(51,607,953)	7	(8,489,619)
Actuarial Loss	December 31, 2010	153,070,543	18	114,103,817	8	16,706,350
Actuarial Loss	December 31, 2011	94,750,078	18	75,025,985	9	9,931,081
Actuarial Loss	December 31, 2012	117,029,116	18	97,228,576	10	11,779,622
Assumption Change	December 31, 2012	288,802,882	18	239,939,376	10	29,069,593
Actuarial Gain	December 31, 2013	(134,810,112)	18	(116,735,025)	11	(13,074,053)
Assumption Change ²	December 31, 2013	(107,553,289)	18	(93,132,746)	11	(10,430,653)
Actuarial Gain	December 31, 2014	(171,898,812)	18	(153,872,289)	12	(16,061,997)
Actuarial Gain	December 31, 2015	(105,003,533)	18	(96,495,720)	13	(9,452,748)
Assumption Change	December 31, 2015	39,814,884	18	36,588,920	13	3,584,261
Actuarial Gain	December 31, 2016	(28,579,026)	18	(26,947,518)	14	(2,491,790)
Actuarial Gain	December 31, 2017	(17,937,638)	18	(17,267,436)	15	(1,514,744)
Actuarial Loss	December 31, 2018	75,264,047	18	73,646,534	16	6,155,616
Assumption Change	December 31, 2018	(6,021,683)	18	(5,892,270)	16	(492,495)
Actuarial Loss	December 31, 2019	8,875,806	18	8,794,684	17	703,075
Method Change	December 31, 2019	(9,437,845)	18	(9,351,586)	17	(747,596)
Actuarial Loss	December 31, 2020	34,739,163	18	34,739,163	18	2,665,159
Subtotal – Cost Groups #1 and #2				\$509,841,192		\$161,164,074

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #3 – Central Contra Costa Sanitary District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$36,185,000	15	\$9,656,811	2	\$5,097,707
Actuarial Loss	December 31, 2008	3,709,835	18	2,327,458	6	439,089
Actuarial Loss	December 31, 2009	10,118,261	18	6,990,219	7	1,149,906
Assumption Change	December 31, 2009	2,003,000	18	1,383,776	7	227,634
Depooling Implementation	December 31, 2009	20,037,235	18	13,842,760	7	2,277,164
Actuarial Loss	December 31, 2010	18,178,489	18	13,550,844	8	1,984,028
Assumption Change ²	December 31, 2010	11,479,648	18	8,557,307	8	1,252,906
Actuarial Loss	December 31, 2011	10,514,535	18	8,325,728	9	1,102,065
Actuarial Loss	December 31, 2012	12,564,241	18	10,438,456	10	1,264,660
Assumption Change	December 31, 2012	22,455,342	18	18,656,049	10	2,260,253
UAAL Prepayment	December 31, 2012	(4,666,477)	18	(3,876,940)	10	(469,706)
Actuarial Loss	December 31, 2013	582,962	18	504,800	11	56,536
Assumption Change ²	December 31, 2013	(14,950,866)	18	(12,946,282)	11	(1,449,954)
UAAL Prepayment	December 31, 2013	(4,662,899)	18	(4,037,706)	11	(452,214)
Actuarial Gain	December 31, 2014	(11,848,823)	18	(10,606,272)	12	(1,107,138)
UAAL Prepayment	December 31, 2014	(2,331,896)	18	(2,087,357)	12	(217,889)
Actuarial Gain	December 31, 2015	(6,504,510)	18	(5,977,488)	13	(585,556)
Assumption Change	December 31, 2015	44,220	18	40,637	13	3,981
Actuarial Gain	December 31, 2016	(1,522,932)	18	(1,435,992)	14	(132,784)
Actuarial Gain	December 31, 2017	(1,621,926)	18	(1,561,327)	15	(136,964)
Actuarial Loss	December 31, 2018	5,331,336	18	5,216,760	16	436,034
Assumption Change	December 31, 2018	1,129,709	18	1,105,430	16	92,395
Actuarial Loss	December 31, 2019	6,365,718	18	6,307,537	17	504,245
Method Change	December 31, 2019	(2,095,302)	18	(2,076,152)	17	(165,974)
Actuarial Loss	December 31, 2020	1,367,912	18	1,367,912	18	104,945
Subtotal – Cost Group #3³				\$63,666,968		\$13,535,369

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

³ CCCSD made a \$70,763,669 prepayment towards the District's UAAL on June 25, 2021. This prepayment is used to reduce the District's UAAL contribution rate effective July 1, 2021. This payment together with the expected UAAL contributions for the first 6 months of calendar year 2021 reduced their UAAL as of December 31, 2020 by an amount equal to \$74,941,494 (i.e., the sum of the discounted present value of \$70,763,669 and the 6-month expected UAAL contributions).

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #4 – Contra Costa Housing Authority

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$7,770,000	15	\$2,073,606	2	\$1,094,630
Actuarial Loss	December 31, 2008	1,573,513	18	987,183	6	186,238
Actuarial Loss	December 31, 2009	1,277,079	18	882,272	7	145,136
Assumption Change	December 31, 2009	425,000	18	293,612	7	48,300
Depooling Implementation	December 31, 2009	(189,275)	18	(130,761)	7	(21,510)
Actuarial Loss	December 31, 2010	619,697	18	461,942	8	67,635
Assumption Change ²	December 31, 2010	(920,656)	18	(686,287)	8	(100,482)
Actuarial Loss	December 31, 2011	1,059,328	18	838,808	9	111,032
Actuarial Loss	December 31, 2012	1,912,999	18	1,589,332	10	192,554
Assumption Change	December 31, 2012	3,722,862	18	3,092,979	10	374,726
Actuarial Gain	December 31, 2013	(2,220,704)	18	(1,922,956)	11	(215,367)
Assumption Change ²	December 31, 2013	(1,077,289)	18	(932,848)	11	(104,477)
Actuarial Gain	December 31, 2014	(1,360,021)	18	(1,217,399)	12	(127,079)
Actuarial Gain	December 31, 2015	(875,294)	18	(804,374)	13	(78,797)
Assumption Change	December 31, 2015	432,801	18	397,734	13	38,962
Actuarial Gain	December 31, 2016	(297,092)	18	(280,132)	14	(25,903)
Actuarial Loss	December 31, 2017	53,895	18	51,881	15	4,551
Actuarial Loss	December 31, 2018	527,741	18	516,399	16	43,162
Assumption Change	December 31, 2018	86,577	18	84,716	16	7,081
Actuarial Loss	December 31, 2019	544,467	18	539,490	17	43,129
Method Change	December 31, 2019	(103,353)	18	(102,408)	17	(8,187)
Actuarial Loss	December 31, 2020	80,685	18	80,685	18	6,190
Subtotal – Cost Group #4				\$5,813,475		\$1,681,524

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Groups #5 – Contra Costa County Fire Protection District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$(1,011,000)	15	\$(269,809)	2	\$(142,429)
Actuarial Loss	December 31, 2008	45,963	18	28,836	6	5,440
Actuarial Loss	December 31, 2009	1,614,180	18	1,115,159	7	183,446
Assumption Change	December 31, 2009	336,000	18	232,126	7	38,185
Depooling Implementation	December 31, 2009	2,142,538	18	1,480,176	7	243,492
Actuarial Loss	December 31, 2010	2,722,306	18	2,029,297	8	297,117
Actuarial Loss	December 31, 2011	1,350,620	18	1,069,462	9	141,563
Actuarial Loss	December 31, 2012	1,787,426	18	1,485,005	10	179,914
Assumption Change	December 31, 2012	3,184,172	18	2,645,432	10	320,504
Actuarial Gain	December 31, 2013	(2,500,665)	18	(2,165,381)	11	(242,518)
Assumption Change ²	December 31, 2013	(985,653)	18	(853,498)	11	(95,590)
Actuarial Gain	December 31, 2014	(2,215,758)	18	(1,983,398)	12	(207,037)
Actuarial Gain	December 31, 2015	(756,551)	18	(695,252)	13	(68,107)
Assumption Change	December 31, 2015	355,946	18	327,106	13	32,043
Actuarial Loss	December 31, 2016	1,591,375	18	1,500,527	14	138,751
Actuarial Loss	December 31, 2017	1,476,313	18	1,421,154	15	124,667
Actuarial Loss	December 31, 2018	1,495,430	18	1,463,292	16	122,307
Assumption Change	December 31, 2018	606,920	18	593,877	16	49,638
Actuarial Loss	December 31, 2019	1,833,052	18	1,816,299	17	145,201
Method Change	December 31, 2019	(866,741)	18	(858,819)	17	(68,657)
Actuarial Loss	December 31, 2020	2,572,886	18	2,572,886	18	197,390
Subtotal – Cost Group #5				\$12,954,476		\$1,395,320

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #6 – Small Districts (General Non-Enhanced)

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Surplus ²	December 31, 2020	\$(861,048)		\$(861,048)	N/A	\$0
Subtotal – Cost Group #6				\$(861,048)		\$0

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Consistent with CCCERA's Actuarial Funding Policy, all prior UAAL layers are considered fully amortized due to surplus.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Groups #7 and #9 – County Safety

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$127,662,439	15	\$34,069,698	2	\$17,984,957
Actuarial Loss	December 31, 2008	25,619,265	18	16,072,887	6	3,032,247
Actuarial Loss	December 31, 2009	55,134,940	18	38,090,074	7	6,265,899
Assumption Change	December 31, 2009	11,076,665	18	7,652,334	7	1,258,825
Depooling Implementation	December 31, 2009	23,852,078	18	16,478,251	7	2,710,708
Actuarial Loss	December 31, 2010	57,287,975	18	42,704,341	8	6,252,496
Actuarial Loss	December 31, 2011	45,209,350	18	35,798,134	9	4,738,547
Actuarial Loss	December 31, 2012	53,258,503	18	44,247,523	10	5,360,760
Assumption Change	December 31, 2012	138,353,562	18	114,945,070	10	13,926,044
Actuarial Gain	December 31, 2013	(35,024,912)	18	(30,328,838)	11	(3,396,760)
Assumption Change ²	December 31, 2013	(43,771,706)	18	(37,902,878)	11	(4,245,035)
Actuarial Gain	December 31, 2014	(61,815,393)	18	(55,332,994)	12	(5,775,948)
Assumption Change ³	December 31, 2014	(51,701)	18	(46,279)	12	(4,831)
Actuarial Gain	December 31, 2015	(58,489,966)	18	(53,750,871)	13	(5,265,450)
Assumption Change	December 31, 2015	39,291,409	18	36,107,859	13	3,537,136
Actuarial Gain	December 31, 2016	(13,557,811)	18	(12,783,829)	14	(1,182,099)
Actuarial Gain	December 31, 2017	(8,178,240)	18	(7,872,678)	15	(690,612)
Actuarial Loss	December 31, 2018	41,037,406	18	40,155,464	16	3,356,324
Assumption Change	December 31, 2018	(47,713,599)	18	(46,688,178)	16	(3,902,349)
Actuarial Loss	December 31, 2019	10,313,187	18	10,218,928	17	816,934
Method Change	December 31, 2019	(1,626,137)	18	(1,611,275)	17	(128,810)
Actuarial Loss	December 31, 2020	5,352,140	18	5,352,140	18	410,612
Subtotal – Cost Groups #7 and #9				\$195,574,885		\$45,059,595

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

³ Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group #9.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #8 – Contra Costa Fire Protection District

Type	Date Established	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ²
Restart of Amortization	December 31, 2007	\$118,472,530	15	\$31,617,157	2	\$16,690,292
CCCFPD Safety POBs	December 31, 2007	(127,509,711)	15	(34,028,824)	2	(17,963,380)
Actuarial Loss	December 31, 2008	6,470,951	18	4,059,713	6	765,889
Actuarial Loss	December 31, 2009	25,785,466	18	17,813,936	7	2,930,431
Assumption Change	December 31, 2009	4,719,291	18	3,260,331	7	536,331
Depooling Implementation	December 31, 2009	45,636,034	18	31,527,737	7	5,186,380
Actuarial Loss	December 31, 2010	36,423,423	18	27,151,218	8	3,975,307
Assumption Change ³	December 31, 2010	(1,526,064)	18	(1,137,578)	8	(166,557)
Actuarial Loss	December 31, 2011	25,322,088	18	20,050,797	9	2,654,095
Actuarial Loss	December 31, 2012	30,063,590	18	24,977,033	10	3,026,065
Assumption Change	December 31, 2012	65,080,742	18	54,069,518	10	6,550,733
Actuarial Gain	December 31, 2013	(21,627,274)	18	(18,727,529)	11	(2,097,440)
Assumption Change ³	December 31, 2013	(17,093,162)	18	(14,801,343)	11	(1,657,716)
Actuarial Gain	December 31, 2014	(27,884,339)	18	(24,960,191)	12	(2,605,476)
Actuarial Gain	December 31, 2015	(18,138,024)	18	(16,668,407)	13	(1,632,842)
Assumption Change	December 31, 2015	23,187,842	18	21,309,069	13	2,087,442
Actuarial Gain	December 31, 2016	(7,918,946)	18	(7,466,872)	14	(690,449)
Actuarial Gain	December 31, 2017	(10,172,006)	18	(9,791,951)	15	(858,975)
Actuarial Loss	December 31, 2018	18,420,258	18	18,024,385	16	1,506,537
Assumption Change	December 31, 2018	(22,431,013)	18	(21,948,944)	16	(1,834,564)
Actuarial Loss	December 31, 2019	11,904,323	18	11,795,521	17	942,972
Method Change	December 31, 2019	(2,989,978)	18	(2,962,651)	17	(236,844)
Actuarial Gain	December 31, 2020	(4,846,815)	18	(4,846,815)	18	(371,844)
Subtotal – Cost Group #8				\$108,315,310		\$16,736,387

Note: Results may be slightly off due to rounding.

¹ Prior to December 31, 2019, Contra Costa Fire Protection District was pooled with East Contra Costa Fire Protection District in Cost Group 8. Effective with the December 31, 2019 valuation, East Contra Costa Fire Protection District was depooled into Cost Group 13. All amortization bases established on or before December 31, 2018 were split between the two employers based on the ratios of actuarial accrued liability as of December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Groups #10 – Moraga-Orinda Fire District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$(2,591,000)	15	\$(691,469)	2	\$(365,017)
Actuarial Loss	December 31, 2008	2,002,150	18	1,256,099	6	236,971
Actuarial Loss	December 31, 2009	5,671,684	18	3,918,293	7	644,568
Assumption Change	December 31, 2009	1,012,000	18	699,142	7	115,010
Depooling Implementation	December 31, 2009	4,873,631	18	3,366,957	7	553,872
Actuarial Loss	December 31, 2010	5,334,964	18	3,976,858	8	582,266
Assumption Change ²	December 31, 2010	806,018	18	600,832	8	87,970
Actuarial Loss	December 31, 2011	6,791,005	18	5,377,324	9	711,789
Actuarial Loss	December 31, 2012	8,924,598	18	7,414,616	10	898,310
Assumption Change	December 31, 2012	12,149,892	18	10,094,212	10	1,222,953
Actuarial Gain	December 31, 2013	(1,027,440)	18	(889,683)	11	(99,642)
Assumption Change ²	December 31, 2013	(3,613,981)	18	(3,129,425)	11	(350,488)
Actuarial Gain	December 31, 2014	(4,813,045)	18	(4,308,315)	12	(449,725)
Actuarial Gain	December 31, 2015	(8,490,806)	18	(7,802,846)	13	(764,369)
Assumption Change	December 31, 2015	3,844,347	18	3,532,862	13	346,080
Actuarial Loss	December 31, 2016	1,028,690	18	969,964	14	89,691
Actuarial Gain	December 31, 2017	(422,995)	18	(407,191)	15	(35,720)
Actuarial Loss	December 31, 2018	6,029,055	18	5,899,484	16	493,098
Assumption Change	December 31, 2018	(4,116,542)	18	(4,028,073)	16	(336,679)
Actuarial Loss	December 31, 2019	3,411,399	18	3,380,219	17	270,226
Method Change	December 31, 2019	(471,164)	18	(466,858)	17	(37,322)
Actuarial Gain	December 31, 2020	(864,383)	18	(864,383)	18	(66,315)
Subtotal – Cost Group #10				\$27,898,621		\$3,747,527

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #11 – San Ramon Valley Fire District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$58,766,000	15	\$15,683,077	2	\$8,278,895
Actuarial Loss	December 31, 2008	10,216,694	18	6,409,699	6	1,209,228
Actuarial Loss	December 31, 2009	9,262,105	18	6,398,742	7	1,052,607
Assumption Change	December 31, 2009	2,453,000	18	1,694,660	7	278,775
Depooling Implementation	December 31, 2009	(20,174,500)	18	(13,937,590)	7	(2,292,763)
Actuarial Loss	December 31, 2010	6,585,812	18	4,909,281	8	718,785
Assumption Change ²	December 31, 2010	5,093,420	18	3,796,803	8	555,904
Actuarial Loss	December 31, 2011	5,513,071	18	4,365,417	9	577,844
Actuarial Loss	December 31, 2012	14,600,741	18	12,130,394	10	1,469,645
Assumption Change	December 31, 2012	26,672,143	18	22,159,396	10	2,684,697
Actuarial Gain	December 31, 2013	(4,492,900)	18	(3,890,500)	11	(435,727)
Assumption Change ²	December 31, 2013	(12,984,002)	18	(11,243,131)	11	(1,259,205)
Actuarial Gain	December 31, 2014	(13,850,852)	18	(12,398,354)	12	(1,294,205)
Actuarial Gain	December 31, 2015	(9,008,582)	18	(8,278,670)	13	(810,981)
Assumption Change	December 31, 2015	5,533,144	18	5,084,826	13	498,111
Actuarial Loss	December 31, 2016	2,020,042	18	1,904,723	14	176,126
UAAL Prepayment	December 31, 2017	(303,806)	18	(292,455)	15	(25,655)
Actuarial Gain	December 31, 2017	(1,837,378)	18	(1,768,728)	15	(155,157)
UAAL Prepayment	December 31, 2018	(261,501)	18	(255,881)	16	(21,387)
Actuarial Loss	December 31, 2018	11,681,729	18	11,430,675	16	955,413
Assumption Change	December 31, 2018	(9,240,163)	18	(9,041,581)	16	(755,725)
UAAL Prepayment	December 31, 2019	(1,267,559)	18	(1,255,974)	17	(100,407)
Actuarial Loss	December 31, 2019	5,365,395	18	5,316,357	17	425,007
Method Change	December 31, 2019	(1,623,299)	18	(1,608,463)	17	(128,586)
UAAL Prepayment	December 31, 2020	(267,529)	18	(267,529)	18	(20,525)
Actuarial Gain	December 31, 2020	(60,980)	18	(60,980)	18	(4,678)
Subtotal – Cost Group #11				\$36,984,213		\$11,576,036

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #12 – Rodeo-Hercules Fire Protection District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$3,960,000	15	\$1,056,818	2	\$557,881
Actuarial Loss	December 31, 2008	957,150	18	600,492	6	113,286
Actuarial Loss	December 31, 2009	2,872,360	18	1,984,375	7	326,434
Assumption Change	December 31, 2009	1,154,000	18	797,243	7	131,148
Depooling Implementation	December 31, 2009	(1,809,374)	18	(1,250,009)	7	(205,629)
Actuarial Loss	December 31, 2010	1,502,503	18	1,120,016	8	163,985
Assumption Change ²	December 31, 2010	662,085	18	493,540	8	72,261
Actuarial Loss	December 31, 2011	2,067,217	18	1,636,885	9	216,672
Actuarial Loss	December 31, 2012	2,246,131	18	1,866,100	10	226,085
Assumption Change	December 31, 2012	3,018,796	18	2,508,036	10	303,858
Actuarial Loss	December 31, 2013	413,088	18	357,702	11	40,062
Assumption Change ²	December 31, 2013	(1,169,821)	18	(1,012,974)	11	(113,451)
Actuarial Loss	December 31, 2014	315,937	18	282,805	12	29,521
Actuarial Gain	December 31, 2015	(990,379)	18	(910,135)	13	(89,157)
Assumption Change	December 31, 2015	775,874	18	713,010	13	69,847
Actuarial Gain	December 31, 2016	(270,731)	18	(255,276)	14	(23,605)
Actuarial Gain	December 31, 2017	(836,969)	18	(805,697)	15	(70,678)
Actuarial Gain	December 31, 2018	(71,915)	18	(70,370)	16	(5,882)
Assumption Change	December 31, 2018	(985,876)	18	(965,621)	16	(80,710)
Actuarial Loss	December 31, 2019	146,468	18	145,129	17	11,602
Method Change	December 31, 2019	(241,485)	18	(239,278)	17	(19,129)
Actuarial Loss	December 31, 2020	179,608	18	179,608	18	13,779
Subtotal – Cost Group #12				\$8,232,400		\$1,668,180

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #13 – East Contra Costa Fire Protection District

Type	Date Established	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ²
Restart of Amortization	December 31, 2007	\$5,666,180	15	\$1,512,152	2	\$798,246
Actuarial Loss	December 31, 2008	309,486	18	194,164	6	36,630
Actuarial Loss	December 31, 2009	1,233,240	18	851,986	7	140,154
Assumption Change	December 31, 2009	225,709	18	155,932	7	25,651
Depooling Implementation	December 31, 2009	2,182,632	18	1,507,876	7	248,049
Actuarial Loss	December 31, 2010	1,742,021	18	1,298,560	8	190,127
Assumption Change ³	December 31, 2010	(72,987)	18	(54,407)	8	(7,966)
Actuarial Loss	December 31, 2011	1,211,078	18	958,969	9	126,937
Actuarial Loss	December 31, 2012	1,437,850	18	1,194,575	10	144,727
Assumption Change	December 31, 2012	3,112,614	18	2,585,980	10	313,302
Actuarial Gain	December 31, 2013	(1,034,367)	18	(895,681)	11	(100,314)
Assumption Change ³	December 31, 2013	(817,514)	18	(707,903)	11	(79,284)
Actuarial Gain	December 31, 2014	(1,333,623)	18	(1,193,770)	12	(124,612)
Actuarial Gain	December 31, 2015	(867,486)	18	(797,199)	13	(78,094)
Assumption Change	December 31, 2015	1,109,004	18	1,019,148	13	99,836
Actuarial Gain	December 31, 2016	(378,739)	18	(357,118)	14	(33,022)
Actuarial Gain	December 31, 2017	(486,496)	18	(468,319)	15	(41,082)
Actuarial Loss	December 31, 2018	880,985	18	862,051	16	72,053
Assumption Change	December 31, 2018	(1,072,807)	18	(1,049,751)	16	(87,742)
Actuarial Gain	December 31, 2019	(646,067)	18	(640,162)	17	(51,177)
Method Change	December 31, 2019	(67,201)	18	(66,587)	17	(5,323)
Actuarial Gain	December 31, 2020	(648,491)	18	(648,491)	18	(49,752)
Subtotal – Cost Group #13				\$5,262,005		\$1,537,344

Note: Results may be slightly off due to rounding.

¹ Prior to December 31, 2019, East Contra Costa Fire Protection District was pooled with Contra Costa Fire Protection District in Cost Group 8. Effective with the December 31, 2019 valuation, East Contra Costa Fire Protection District was depooled into Cost Group 13. All amortization bases established on or before December 31, 2018 were split between the two employers based on the ratios of actuarial accrued liability as of December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Special Adjustments

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
County General POBs	December 31, 2007	\$(453,973,319)	15	\$(121,152,954)	2	\$(63,955,091)
Moraga General POBs	December 31, 2007	(701,412)	15	(187,187)	2	(98,814)
First Five UAAL Prepayment	December 31, 2011	(1,794,205)	11	(434,974)	2	(233,191)
LAFCO UAAL Prepayment	December 31, 2017	(30,817)	18	(29,666)	15	(2,602)
LAFCO UAAL Prepayment	December 31, 2019	(31,680)	18	(31,390)	17	(2,509)
LAFCO UAAL Prepayment	December 31, 2020	(31,963)	18	(31,963)	18	(2,452)
Subtotal – Special Adjustments				\$(121,868,134)		\$(64,294,659)

Note: Results may be slightly off due to rounding.

¹ As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

All Cost Groups Combined

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$1,139,949,302	15	\$304,222,049	2	\$160,594,920
County General POBs ²	December 31, 2007	(453,973,319)	15	(121,152,954)	2	(63,955,091)
Moraga General POBs ²	December 31, 2007	(701,412)	15	(187,187)	2	(98,814)
CCCFPD Safety POBs ²	December 31, 2007	(127,509,711)	15	(34,028,824)	2	(17,963,380)
Actuarial Loss	December 31, 2008	130,938,206	18	82,147,362	6	15,497,592
Actuarial Loss	December 31, 2009	278,010,637	18	192,064,158	7	31,594,967
Assumption Change	December 31, 2009	62,968,491	18	43,501,897	7	7,156,153
Depooling Implementation	December 31, 2009	1,849,086	18	1,277,444	7	210,144
Actuarial Loss	December 31, 2010	283,467,735	18	211,306,173	8	30,938,096
Assumption Change ³	December 31, 2010	15,521,464	18	11,570,210	8	1,694,036
Actuarial Loss	December 31, 2011	193,788,371	18	153,447,508	9	20,311,625
First Five UAAL Prepayment ²	December 31, 2011	(1,794,205)	11	(434,974)	2	(233,191)
Actuarial Loss	December 31, 2012	243,825,195	18	202,571,611	10	24,542,342
Assumption Change	December 31, 2012	566,553,007	18	470,696,048	10	57,026,663
Sanitary UAAL Prepayment	December 31, 2012	(4,666,477)	18	(3,876,940)	10	(469,706)
Actuarial Gain	December 31, 2013	(201,742,323)	18	(174,693,091)	11	(19,565,223)
Assumption Change ³	December 31, 2013	(204,017,283)	18	(176,663,028)	11	(19,785,853)
Sanitary UAAL Prepayment	December 31, 2013	(4,662,899)	18	(4,037,706)	11	(452,214)
Actuarial Gain	December 31, 2014	(296,704,729)	18	(265,590,177)	12	(27,723,696)
Assumption Change ⁴	December 31, 2014	(51,701)	18	(46,279)	12	(4,831)
Sanitary UAAL Prepayment	December 31, 2014	(2,331,896)	18	(2,087,357)	12	(217,889)

¹ As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.

² Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission, Local Agency Formation Commission, or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Contra Costa Fire Protection District that have been allocated to their Safety cost group.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

⁴ Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group #9.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

All Cost Groups Combined (continued)

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Gain	December 31, 2015	\$(209,125,132)	18	\$(192,180,962)	13	\$(18,826,101)
Assumption Change	December 31, 2015	114,389,471	18	105,121,171	13	10,297,699
Actuarial Gain	December 31, 2016	(47,885,171)	18	(45,151,522)	14	(4,175,084)
San Ramon UAAL Prepayment	December 31, 2017	(303,806)	18	(292,455)	15	(25,655)
LAFCO UAAL Prepayment ²	December 31, 2017	(30,817)	18	(29,666)	15	(2,602)
Actuarial Gain	December 31, 2017	(39,963,440)	18	(38,470,290)	15	(3,374,714)
San Ramon UAAL Prepayment	December 31, 2018	(261,501)	18	(255,881)	16	(21,387)
Actuarial Loss	December 31, 2018	160,596,072	18	157,144,674	16	13,134,662
Assumption Change	December 31, 2018	(89,758,477)	18	(87,830,394)	16	(7,341,150)
San Ramon UAAL Prepayment	December 31, 2019	(1,267,559)	18	(1,255,974)	17	(100,407)
LAFCO UAAL Prepayment	December 31, 2019	(31,680)	18	(31,390)	17	(2,509)
Actuarial Loss	December 31, 2019	48,113,747	18	47,674,003	17	3,811,214
Method Change	December 31, 2019	(19,522,505)	18	(19,344,076)	17	(1,546,428)
San Ramon UAAL Prepayment	December 31, 2020	(267,529)	18	(267,529)	18	(20,525)
LAFCO UAAL Prepayment	December 31, 2020	(31,963)	18	(31,963)	18	(2,452)
Actuarial Loss	December 31, 2020	37,871,725	18	37,871,725	18	2,905,486
CG#6 - Actuarial Surplus	December 31, 2020	(861,048)	N/A	(861,048)	N/A	0
Subtotal – All Cost Groups				\$851,814,363		\$193,806,697
Terminated Employers ³				7,530,886		
Total CCCERA				\$859,345,249		

Note: Results may be slightly off due to rounding.

¹ As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.

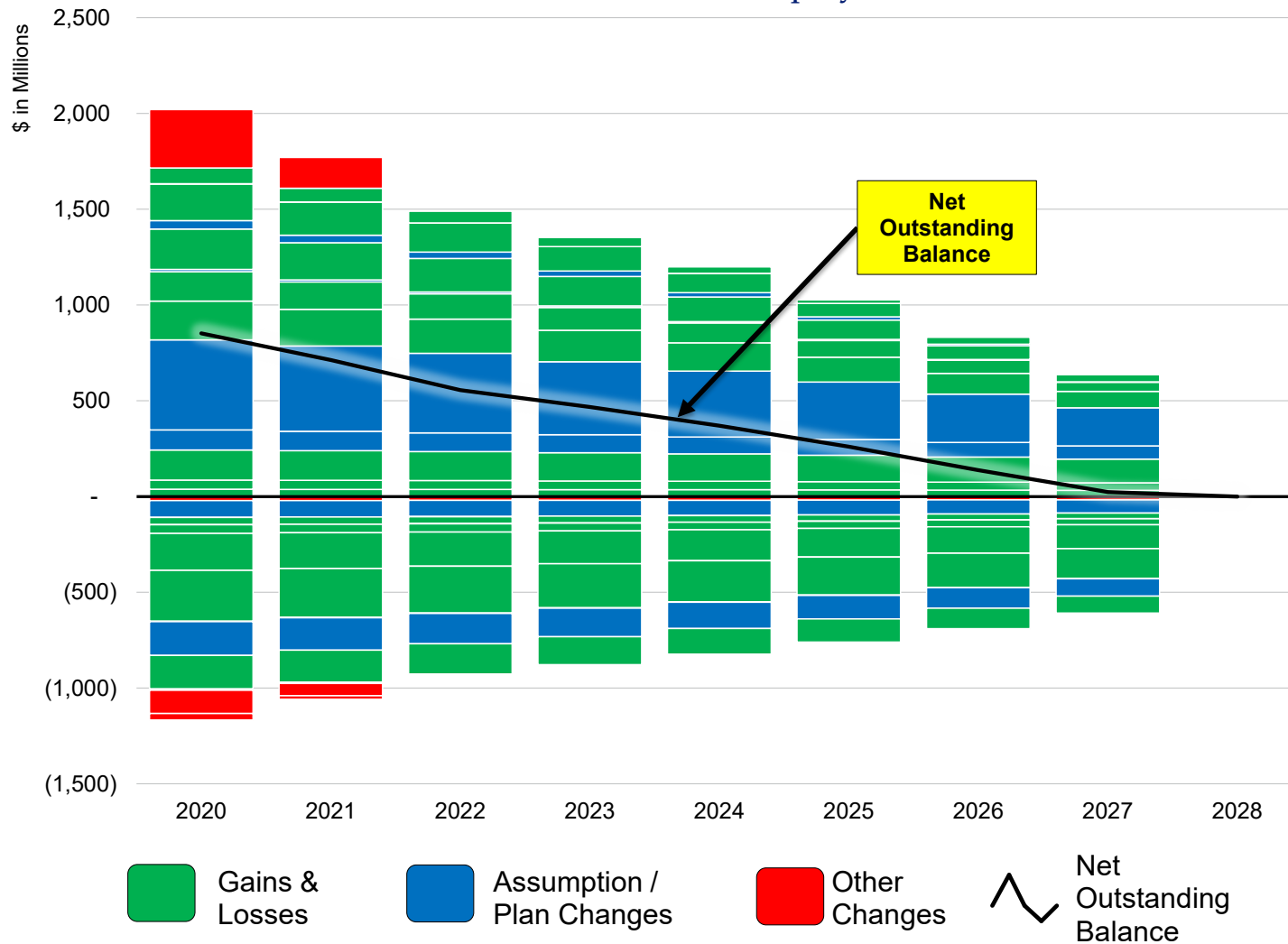
² Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission, Local Agency Formation Commission, or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Contra Costa Fire Protection District that have been allocated to their Safety cost group.

³ Starting with the December 31, 2016 valuation, the three terminated employers (i.e., Diablo Water District, Delta Diablo Sanitation District and City of Pittsburg) have been moved from Cost Groups #1, #2 and #7 to their own Terminated Employers Cost Group.

Section 3: Supplemental Information

Exhibit J: Projection of UAAL Balances and Payments

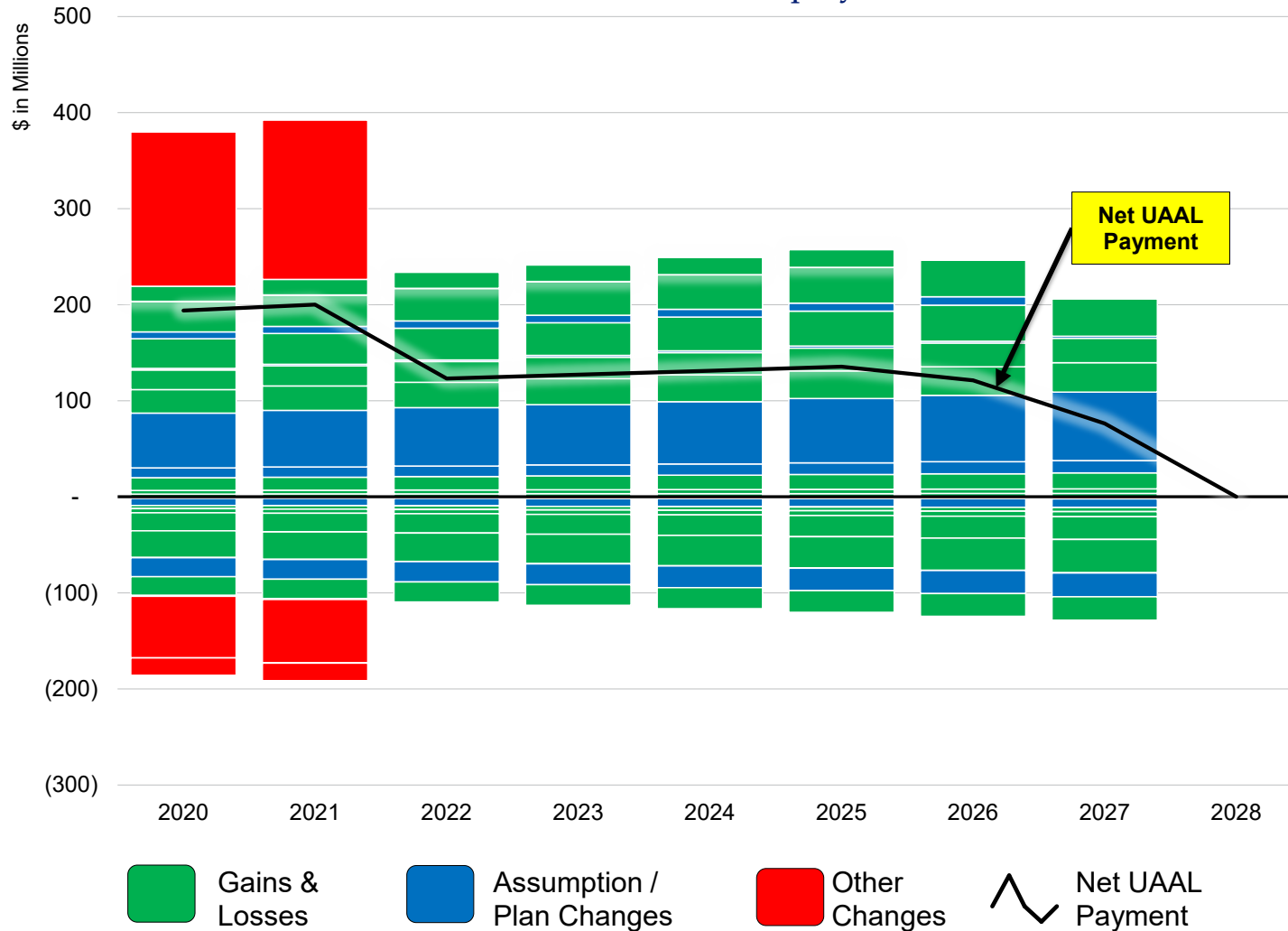
Outstanding Balance of \$852 Million in Net UAAL as of December 31, 2020
Excludes Terminated Employers



Section 3: Supplemental Information

Exhibit J: Projection of UAAL Balances and Payments (continued)

Annual Payments Required to Amortize \$852 Million in Net UAAL as of December 31, 2020
Excludes Terminated Employers



Note: The UAAL Payment shown above for year 2027 is before taking into account the outstanding balance of the UAAL as of that same date. If the outstanding balance of the UAAL is taken into account, the UAAL payment for 2027 would be reduced to about \$23 million.

Section 3: Supplemental Information

Exhibit K: Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	The single-sum value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Section 3: Supplemental Information

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Section 3: Supplemental Information

Assumptions or Actuarial Assumptions:	<p>The estimates upon which the cost of the Fund is calculated, including:</p> <p><u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;</p> <p><u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</p> <p><u>Retirement rates</u> - the rate or probability of retirement at a given age or service;</p> <p><u>Disability rates</u> - the probability of disability retirement at a given age;</p> <p><u>Termination rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</p> <p><u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</p>
Closed Amortization Period:	<p>A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.</p>
Decrements:	<p>Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.</p>
Defined Benefit Plan:	<p>A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.</p>
Defined Contribution Plan:	<p>A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.</p>
Employer Normal Cost:	<p>The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.</p>
Experience Study:	<p>A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.</p>
Funded Ratio:	<p>The ratio of the Actuarial Value of Assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.</p>
Investment Return:	<p>The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.</p>

Section 3: Supplemental Information

Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of non-valuation reserves.

Section 4: Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and Methods

Rationale for Assumptions:

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2015 through December 31, 2017 Actuarial Experience Study report dated April 23, 2019. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.

Economic Assumptions

Net Investment Return:

7.00%; net of investment expenses.

Based on the Actuarial Experience Study referenced above, expected investment expenses represent about 0.65% of the Actuarial Value of Assets.

Administrative Expenses:

1.14% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member. This assumption changes each year based on the actual administrative expenses as a percent of actual compensation during the calendar year leading up to the valuation date.

For the 2020 calendar year, actual administrative expenses were \$10,749,625 and actual payroll was \$943,422,017. This results in the administrative expense assumption of 1.14% of payroll, allocated between employers and members as shown below:

	Average Normal Cost Rate Before Administrative Expense	Weighting	Total
Employer	15.04%	56.97%	0.65%
Member	11.36%	43.03%	0.49%
Total		100.00%	1.14%

The employer Normal Cost rate is then increased by the same percent of payroll as the basic member rate with the remaining employer loading allocated to the employer UAAL rate. This is done to maintain a 50/50 sharing of Normal Cost for those in the PEPRAs tiers. The table below shows this allocation.

Allocation of Administrative Expense Load as a % of Payroll	
Addition to Employer Basic Normal Cost Rate	0.49%
Addition to Employer Basic UAAL Rate	0.16%
Addition to Member Basic Rate	0.49%
Total Addition to Contribution Rates	1.14%

Section 4: Actuarial Valuation Basis

Employee Contribution Crediting Rate:	7.00%, compounded semi-annually.
Consumer Price Index:	<p>Increases of 2.75% per year.</p> <p>Benefits for General Tier 1, Tier 3 (non-disability), Tier 4 and Tier 5 (non-disability) and Safety Tier A and Tier D are subject to a 3.00% maximum COLA increase due to CPI per year (valued as a 2.75% increase).</p> <p>Benefits for General Tier 2, Tier 3 (disability) and Tier 5 (disability) are subject to a 4.00% maximum change per year (valued as a 2.75% increase).</p> <p>Benefits for General Tier 4 and Tier 5 members covered under certain memoranda of understanding and Safety Tier C and Tier E are subject to a 2.00% maximum change per year (valued as a 2.00% increase).</p> <p>For members that have COLA banks, they are reflected in projected future COLAs.</p> <p>The actual COLA granted by CCCERA on April 1, 2021 has been reflected for non-active members in the December 31, 2020 valuation.</p>
Payroll Growth:	Inflation of 2.75% per year plus “across the board” real salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Increase in Internal Revenue Code Section 401(a)(17) Compensation Limit:	Increase of 2.75% per year from the valuation date.
Increase in Section 7522.10 Compensation Limit:	Increase of 2.75% per year from the valuation date.

Section 4: Actuarial Valuation Basis

Salary Increases:

The annual rate of compensation increase includes:

- Inflation at 2.75%, plus
- “Across the board” real salary increases of 0.50% per year, plus
- The following merit and promotion increases:

Years of Service	Rate (%)	
	General	Safety
Less than 1	12.00	13.00
1 – 2	7.00	8.00
2 – 3	5.25	5.75
3 – 4	3.75	4.75
4 – 5	2.75	2.75
5 – 6	2.25	2.00
6 – 7	1.75	1.75
7 – 8	1.50	1.50
8 – 9	1.40	1.40
9 – 10	1.30	1.30
10 – 11	1.20	1.25
11 – 12	1.10	1.20
12 – 13	1.00	1.15
13 – 14	0.90	1.10
14 – 15	0.80	1.05
15 – 16	0.75	1.00
16 – 17	0.70	1.00
17 – 18	0.65	1.00
18 – 19	0.60	1.00
19 – 20	0.55	1.00
20 & Over	0.50	1.00

The average total assumed salary increase for active members in the December 31, 2020 actuarial valuation is 5.2%.

Section 4: Actuarial Valuation Basis

Demographic Assumptions

Post-Retirement Mortality Rates:

Healthy

- **General Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018.
- **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2018.
- **All Beneficiaries:** Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females) multiplied by 105% for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2018.

Disabled

- **General Members:** Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2018.
- **Safety Members:** Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2018.

The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Section 4: Actuarial Valuation Basis

Pre-Retirement Mortality Rates:

- **General Members:** Pub-2010 General Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018.
- **Safety Members:** Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018.

Age	Rate (%)			
	General ¹		Safety ¹	
	Male	Female	Male	Female
20	0.04	0.01	0.04	0.02
25	0.02	0.01	0.03	0.02
30	0.03	0.01	0.04	0.02
35	0.04	0.02	0.04	0.03
40	0.06	0.03	0.05	0.04
45	0.09	0.05	0.07	0.06
50	0.13	0.08	0.10	0.08
55	0.19	0.11	0.15	0.11
60	0.28	0.17	0.23	0.14
65	0.41	0.27	0.35	0.20
70	0.61	0.44	0.66	0.39

All pre-retirement deaths are assumed to be non-service connected.

¹ Generational projections beyond the base year (2010) are not reflected in the above mortality rates.

Mortality Rates for Member Contributions:

- **General Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected 30 years with the two-dimensional mortality improvement scale MP-2018, weighted 30% male and 70% female.
- **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected 30 years with the two-dimensional mortality improvement scale MP-2018, weighted 85% male and 15% female.

Section 4: Actuarial Valuation Basis

Disability Incidence:

Age	Rate (%)		
	General Tier 1 and Tier 4	General Tier 3 and Tier 5	Safety
20	0.01	0.01	0.02
25	0.02	0.02	0.16
30	0.04	0.03	0.32
35	0.08	0.05	0.46
40	0.22	0.08	0.56
45	0.36	0.11	0.90
50	0.52	0.13	2.54
55	0.60	0.16	3.80
60	0.60	0.22	4.30
65	0.60	0.25	4.50
70	0.60	0.25	4.50

60% of General Tier 1 and Tier 4 disabilities are assumed to be service connected disabilities. The other 40% are assumed to be non-service connected disabilities.

30% of General Tier 3 and Tier 5 disabilities are assumed to be service connected disabilities. The other 70% are assumed to be non-service connected disabilities.

100% of Safety disabilities are assumed to be service connected disabilities.

Section 4: Actuarial Valuation Basis

Termination:

Years of Service	Rate (%)	
	General	Safety
Less than 1	14.00	12.50
1 – 2	9.50	10.00
2 – 3	9.25	8.25
3 – 4	6.50	5.75
4 – 5	5.25	5.00
5 – 6	5.00	4.25
6 – 7	4.50	3.50
7 – 8	4.25	3.25
8 – 9	3.75	3.00
9 – 10	3.50	2.50
10 – 11	3.25	2.25
11 – 12	3.00	2.10
12 – 13	2.75	2.00
13 – 14	2.50	1.90
14 – 15	2.50	1.80
15 – 16	2.25	1.70
16 – 17	2.25	1.60
17 – 18	2.00	1.50
18 – 19	2.00	1.25
19 – 20	1.75	1.00
20 & Over	1.25	0.75

The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit.

No termination is assumed after a member is first assumed to retire.

Section 4: Actuarial Valuation Basis

Retirement Rates (General):

Age	Rate (%)					
	Tier 1 Enhanced		Tier 3 Enhanced		Tier 1 Non-Enhanced	PEPRA Tier 4 and Tier 5
	Less than 30 Years of Service	Over 30 Years of Service	Less than 30 Years of Service	Over 30 Years of Service		
50	5.00	9.00	4.00	7.20	3.00	0.00
51	4.00	7.20	3.00	5.40	3.00	0.00
52	4.00	7.20	3.00	5.40	3.00	2.00
53	4.00	7.20	4.00	7.20	3.00	3.00
54	12.00	21.60	6.00	10.80	3.00	3.00
55	15.00	27.00	8.00	14.40	10.00	5.00
56	17.00	30.60	8.00	9.60	10.00	5.00
57	17.00	30.60	9.00	10.80	10.00	6.00
58	17.00	30.60	10.00	12.00	10.00	6.00
59	22.00	26.40	12.00	14.40	10.00	8.00
60	25.00	30.00	13.00	15.60	25.00	8.00
61	30.00	36.00	18.00	21.60	15.00	12.00
62	30.00	36.00	22.00	26.40	40.00	18.00
63	25.00	30.00	22.00	26.40	35.00	18.00
64	25.00	30.00	25.00	30.00	30.00	20.00
65	35.00	35.00	32.00	32.00	40.00	25.00
66	40.00	40.00	32.00	32.00	35.00	25.00
67	40.00	40.00	30.00	30.00	35.00	25.00
68	40.00	40.00	30.00	30.00	35.00	25.00
69	40.00	40.00	30.00	30.00	35.00	25.00
70	35.00	35.00	35.00	35.00	40.00	40.00
71	35.00	35.00	35.00	35.00	40.00	40.00
72	35.00	35.00	35.00	35.00	40.00	40.00
73	35.00	35.00	35.00	35.00	50.00	40.00
74	35.00	35.00	35.00	35.00	50.00	40.00
75 & Over	100.00	100.00	100.00	100.00	100.00	100.00

Section 4: Actuarial Valuation Basis

Retirement Rates (Safety):	Rate (%)			
	Tier A Enhanced			Tier A Non-Enhanced and PEPRA Tier D and Tier E
	Age	Less than 30 Years of Service	Over 30 Years of Service	
45	7.00	8.75	2.00	0.00
46	3.00	3.75	1.00	0.00
47	10.00	12.50	4.00	0.00
48	10.00	12.50	4.00	0.00
49	25.00	31.25	12.00	0.00
50	25.00	31.25	18.00	5.00
51	25.00	31.25	18.00	4.00
52	18.00	22.50	15.00	4.00
53	18.00	22.50	15.00	5.00
54	18.00	22.50	15.00	6.00
55	20.00	30.00	18.00	10.00
56	20.00	30.00	15.00	10.00
57	22.00	33.00	15.00	18.00
58	22.00	33.00	25.00	18.00
59	22.00	33.00	25.00	18.00
60	25.00	37.50	25.00	18.00
61	25.00	37.50	25.00	20.00
62	25.00	37.50	25.00	20.00
63	30.00	45.00	30.00	20.00
64	40.00	60.00	35.00	25.00
65 & Over	100.00	100.00	100.00	100.00
Retirement Age and Benefit for Deferred Vested Members:	General:	59		
	Safety with Reciprocity:	53		
	Safety without Reciprocity:	50		
	40% of future General and 70% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 3.75% and 4.25% compensation increases are assumed per annum for General and Safety, respectively.			
Future Benefit Accruals:	1.0 year of service per year for full-time employees. Continuation of current partial service accrual for part-time employees.			
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.			

Section 4: Actuarial Valuation Basis

Definition of Active Members:	All active members of CCCERA as of the valuation date.																												
Form of Payment:	All active and inactive members are assumed to elect the unmodified option at retirement. There is no explicit assumption for children's benefits.																												
Percent Married:	For all active and inactive members, 65% of male members and 50% of female members are assumed to be married at pre-retirement death or retirement.																												
Age and Gender of Spouse:	For all active and inactive members, male members are assumed to have a female spouse who is 3 years younger than the member and female members are assumed to have a male spouse who is 2 years older than the member.																												
Offsets by Other Plans of the Employer for Disability Benefits:	The Plan requires members who retire because of disability from General Tier 3 and General PEPRA Tier 5 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.																												
Leave Cashout Assumptions:	<p>The following assumptions for leave cashouts as a percentage of final average pay are used:</p> <p><i>General Tiers 1, 2 and 3 Safety Tiers A and C</i></p> <table> <tr> <td>Cost Group 1</td> <td>1.00%</td> </tr> <tr> <td>Cost Group 2</td> <td>0.50% for Tier 2 0.75% for Tier 3</td> </tr> <tr> <td>Cost Group 3</td> <td>4.75%</td> </tr> <tr> <td>Cost Group 4</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 5</td> <td>1.25%</td> </tr> <tr> <td>Cost Group 6</td> <td>0.25%</td> </tr> <tr> <td>Cost Group 7</td> <td>0.75%</td> </tr> <tr> <td>Cost Group 8</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 9</td> <td>0.00%</td> </tr> <tr> <td>Cost Group 10</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 11</td> <td>2.50%</td> </tr> <tr> <td>Cost Group 12</td> <td>2.00%</td> </tr> <tr> <td>Cost Group 13</td> <td>0.50%</td> </tr> <tr> <td>Terminated Employers</td> <td>0.00%</td> </tr> </table> <p><i>General PEPRA Tiers 4 and 5 Safety PEPRA Tiers D and E</i></p> <p>None</p>	Cost Group 1	1.00%	Cost Group 2	0.50% for Tier 2 0.75% for Tier 3	Cost Group 3	4.75%	Cost Group 4	0.50%	Cost Group 5	1.25%	Cost Group 6	0.25%	Cost Group 7	0.75%	Cost Group 8	0.50%	Cost Group 9	0.00%	Cost Group 10	0.50%	Cost Group 11	2.50%	Cost Group 12	2.00%	Cost Group 13	0.50%	Terminated Employers	0.00%
Cost Group 1	1.00%																												
Cost Group 2	0.50% for Tier 2 0.75% for Tier 3																												
Cost Group 3	4.75%																												
Cost Group 4	0.50%																												
Cost Group 5	1.25%																												
Cost Group 6	0.25%																												
Cost Group 7	0.75%																												
Cost Group 8	0.50%																												
Cost Group 9	0.00%																												
Cost Group 10	0.50%																												
Cost Group 11	2.50%																												
Cost Group 12	2.00%																												
Cost Group 13	0.50%																												
Terminated Employers	0.00%																												

Section 4: Actuarial Valuation Basis

Service from Accumulated Sick Leave Conversion:	<p>The following assumptions for additional service converted from accumulated sick leave as a percentage of service at retirement are used:</p> <p><i>Service Retirements:</i></p> <p>General: 1.10%</p> <p>Safety: 1.80%</p> <p><i>Disability Retirements:</i></p> <p>General: 0.06%</p> <p>Safety: 1.20%</p> <p>Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.</p>
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Changed Actuarial Assumptions

There have been no changes in actuarial assumptions since the prior valuation.

Actuarial Funding Policy

Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation, as if the current benefit formula for each individual has always been in effect (i.e., “replacement life within a tier”).
Actuarial Value of Assets:	Market value of assets (MVA) less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value, and are recognized semi-annually over a five-year period.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
Amortization Policy:	<p>The UAAL as of December 31, 2014 will continue to be amortized over separate amortization layers based on the valuations during which each separate layer was previously established.</p> <p>Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of December 31 will be amortized over a period of 18 years.</p> <p>Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.</p> <p>Unless the Board adopts an alternative amortization period after receiving an actuarial analysis:</p> <ul style="list-style-type: none">• With the exception noted below, the increase in UAAL as a result of any plan amendments will be amortized over a period of 10 years;

Section 4: Actuarial Valuation Basis

- The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive. If the increase in UAAL is due to the impact of benefits resulting from additional service permitted in Section 31641.04 of the 1937 CERL (Golden Handshake), the entire increase in UAAL will be funded in full upon adoption of the Golden Handshake.

The UAAL will be amortized over “closed” amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation.

The UAAL will be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase (i.e., wage inflation).

If an overfunding or “surplus” exists (i.e., the VVA exceeds the AAL, so that the total of all UAAL amortization layers becomes negative), any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods.

If the surplus exceeds 20% of the AAL per Section 7522.52 of the Government Code, then the amount of surplus in excess of 20% of the AAL (and any subsequent surpluses in excess of that amount) will be amortized over an “open” amortization period of 30 years, but only if the other conditions of Section 7522.52 have also been met. If those conditions are not met, then the surplus will not be amortized and the full Normal Cost will be contributed.

These amortization policy components will generally apply separately to each of CCCERA’s UAAL cost groups with the exception that the conditions of Section 7522.52 apply to the total plan.

Other Actuarial Methods

Employer Contributions:

Employer contributions consist of two components:

Normal Cost

The annual contribution rate that, if paid annually from a member’s first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member’s retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member’s compensation.

Contribution to the Unfunded Actuarial Accrued Liability (UAAL)

The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Association) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.25% (i.e., 2.75% inflation plus 0.50% “across the board” salary increase).

The amortization policy is described on the previous page.

Section 4: Actuarial Valuation Basis

The recommended employer contributions are provided in *Section 2, Subsection F*.

General Tier 4 (2% COLA)

The General Tier 4 (2% COLA) in Cost Group #1 continues to not have any actual members as of December 31, 2020. The contribution rates for this cost group have been developed based on generally the same methodology used to estimate contribution rates for all of the PEPRA tiers in the December 31, 2012 valuation. We have assumed in this valuation that the demographic profiles (e.g., entry age, composition of male versus female, etc.) for this cost group can be approximated by the data profiles of current active members with membership dates on and after January 1, 2011.

Member Contributions:

Non-PEPRA Members

Articles 6 and 6.8 of the 1937 Act define the methodology to be used in the calculation of member basic contribution rates for non-PEPRA General and Safety members, respectively. The member's basic contribution rate is determined so that, if paid annually from a member's first year of membership through the prescribed retirement age, would accumulate to the amount necessary to fund an annuity that is equal to:

- 1/120 of one year Final Average Salary per year of service at age 55 for General Tier 1 and Tier 3 Non-Enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Non-Enhanced members
- 1/120 of one year Final Average Salary per year of service at age 60 for General Tier 1 and Tier 3 Enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Enhanced members
- 1/100 of three year Final Average Salary per year of service at age 50 for Safety Tier C Enhanced members

Member contributions are accumulated at an annual interest rate adopted annually by the Board. Note that recently negotiated MOU's for County General members no longer include the 50% employer subvention of the members' basic contributions. Districts pay varying portions of the members' basic contributions on a nonrefundable basis. Members also pay 50% of the cost-of-living benefit. For most Safety Tier A employers, Safety members also subvent a portion of the employer rate, currently up to 9% of compensation (depending on their MOU).

Effective with the December 31, 2014 valuation, for determining the cost of the total benefit (i.e., basic and COLA components), the leave cashout assumptions are recognized in the valuation as an employer and member cost. Prior to the December 31, 2014 valuation, for determining the cost of the basic benefit (i.e., non-COLA component), the leave cashout assumptions were recognized in the valuation only as an employer cost and did not affect member contribution rates. In other words, the leave cashout assumptions were only used in establishing COLA member contribution rates.

As a result of including the leave cashout assumptions in the basic member rates for the members of each specific cost group, the COLA member rates are no longer pooled across all members of the same tier. This results in thirteen different sets of member contribution rates for each specific cost group.

PEPRA Members

Section 4: Actuarial Valuation Basis

Pursuant to Section 7522.30(a) of the Government Code, PEPRA members are required to contribute at least 50% of the Normal Cost rate. We have assumed that exactly 50% of the Normal Cost would be paid by PEPRA members. In addition, we have calculated the total Normal Cost rate for the PEPRA tiers to the nearest one fiftieth of one percent (i.e., the nearest even one-hundredth) as that will allow the Normal Cost rate to be shared exactly 50:50 without going beyond two decimal places.

The member contribution rates for all members are provided in *Section 4, Exhibit III*.

Cost Sharing Adjustments:

Starting with the December 31, 2009 Actuarial Valuation, the Board took action to depool CCCERA's assets, liabilities and normal cost by employer when determining employer contribution rates. The Board action included a review of experience back to December 31, 2002. This did not involve recalculation of any employer rates prior to December 31, 2009. However, it did involve reflecting the separate experience of the employers in each individual cost group back from December 31, 2002 through December 31, 2009. The cost groups are detailed in Section 4, Exhibit V. In addition, the Board action called for a discontinuation of certain cost sharing adjustments for both member and employer contribution rates for General Tier 1 and Safety Tier A. Even under the depooling structure, there are a few remaining cost sharing arrangements. Here is a summary of the cost sharing arrangements that were implemented in the December 31, 2009 Actuarial Valuation:

- Smaller employers (less than 50 active members as of December 31, 2009) were pooled with the applicable County tier.

For the December 31, 2009 through December 31, 2018 valuations, Safety members from the East Contra Costa Fire Protection District were pooled with Safety members of the Contra Costa County Fire Protection District. Starting with the December 31, 2019 valuation the Safety members from the East Contra Costa Fire Protection District were depooled from the Safety members of the Contra Costa Fire Protection District based on AAL.

- Due to a statutory requirement, the Superior Court was pooled with the County regardless of how many members the Court has.
- UAAL costs are pooled between Cost Group #1 and Cost Group #2 which represent General County and Small Districts. UAAL costs are also pooled for Cost Groups #7 and #9 which are Safety County tiers.

Additional Contribution Rate Adjustments:

Adjustments are made to some UAAL amounts for the County, the Contra Costa County Fire Protection District (CCCFPD), the Moraga-Orinda Fire District (Moraga), First 5 – Children & Families Commission (First Five) and Local Agency Formation Commission (LAFCO) to account for Pension Obligation Bonds (POBs) and any other special contributions that they previously made. These adjustments serve to reduce the UAAL contribution rate for these employers. The outstanding balances of these adjustments as of December 31, 2020 are as follows:

	County General	Moraga General	First Five General	LAFCO General
Basic	\$67,258,245	\$118,444	\$247,648	\$67,980
COL	53,894,709	68,743	187,326	25,039

Section 4: Actuarial Valuation Basis

Internal Revenue Code Section 415:

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of \$160,000 indexed for inflation. That limit is \$230,000 for 2021. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

Non-PEPRA benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

Contribution rates determined in this valuation have not been reduced for the Section 415 limitations. However, it is anticipated that PEPRA members will not be limited in the future due to the PEPRA compensation limit applied in the determination of their benefit. Actual limitations will result in actuarial gains as they occur.

Changed Actuarial Methods

Effective with the results included in the December 31, 2020 valuation, we reflected a recommended change made to allocate one-half of the COLA normal cost for legacy Safety members with at least 30 years of service to the employers instead of to the remaining legacy Safety with less than 30 years of service.

Section 4: Actuarial Valuation Basis

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	January 1 through December 31
Membership Eligibility:	
<i>General Tier 1</i>	General members hired before July 1, 1980 and electing not to transfer to Tier 2 Plan. Certain General members with membership dates before January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 1.
<i>General Tier 2</i>	Most General members hired on or after August 1, 1980 and all General members hired before July 1, 1980 electing to transfer to the Tier 2 Plan. Effective October 1, 2002, for the County, Tier 2 was eliminated and all County employees (excluding CNA employees) in Tier 2 were placed in Tier 3. Effective January 1, 2005, all CNA employees in Tier 2 were placed in Tier 3.
<i>General Tier 3</i>	General members with membership dates before January 1, 2013 who are not placed in Tier 1 are placed in Tier 3.
<i>General PEPPRA Tier 4</i>	General members with membership dates on or after January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 4.
<i>General PEPPRA Tier 5</i>	General members with membership dates on or after January 1, 2013 who are not placed in Tier 4 are placed in Tier 5.
<i>Safety Tier A and Tier C</i>	Safety members with membership dates before January 1, 2013. County Sheriff's Department Safety members hired on or after January 1, 2007, but before January 1, 2013 are placed in Safety Tier C Enhanced.
<i>Safety PEPPRA Tier D and Tier E</i>	Safety members with membership dates on or after January 1, 2013. Safety members from certain bargaining units are placed in Safety Tier E.

Section 4: Actuarial Valuation Basis

Final Compensation for Benefit Determination:	
<i>General Tier 1 and Tier 3 (non-disability), Safety Tier A</i>	Highest consecutive 12 months of compensation earnable. (§31462.1) (FAS1)
<i>General Tier 2 and Tier 3 (disability), Safety Tier C</i>	Highest consecutive 36 months of compensation earnable. (§31462) (FAS3)
<i>General Tier 4 and Tier 5, Safety Tier D and Tier E</i>	Highest consecutive 36 months of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)
Compensation Limit:	
<i>General Tier 1, Tier 2 and Tier 3, Safety Tier A and Tier C</i>	For members with membership dates on or after January 1, 1996, Compensation Earnable is limited to Internal Revenue Code Section 401(a)(17). The limit is \$290,000 for calendar year 2021. The limit is indexed for inflation on an annual basis.
<i>General Tier 4 and Tier 5, Safety Tier D and Tier E</i>	Pensionable Compensation is limited to \$128,059 for 2021 (\$153,671, if not enrolled in Social Security). The limit is indexed for inflation on an annual basis.
Social Security Primary Insurance Amount:	
<i>General Tier 2</i>	Estimated Social Security award at age 62 assuming level future earnings. (PIA)
Service:	
<i>All Tiers</i>	Years of service (Yrs) are generally based on a member's employment during a period of time for which deductions are made from their compensation. Includes accumulated sick leave as of the date of retirement. (§31641.01)
<i>General Tier 2</i>	Maximum of 30 years (Yrs30).
Service Retirement Eligibility:	
<i>General Tier 1, Tier 2, and Tier 3</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years of service regardless of age. (§31672)
<i>General Tier 4 and Tier 5</i>	Age 52 with 5 years of service or age 70 regardless of service. (§7522.20(a) and §31672.3)
<i>Safety Tier A and Tier C</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 20 years of service regardless of age. (§31663.25)
<i>Safety Tier D and Tier E</i>	Age 50 with 5 years of service or age 70 regardless of service. (§7522.25(a) and §31672.3)

Section 4: Actuarial Valuation Basis

Benefit Formula:

The offsets shown in all benefit formulas only apply to members integrated with Social Security.

*General Tier 1 and Tier 3
(Non Enhanced) (§31676.11)*

Retirement Age	Benefit Formula
50	1.24% x (FAS1 – \$1,400) x Yrs
55	1.67% x (FAS1 – \$1,400) x Yrs
60	2.18% x (FAS1 – \$1,400) x Yrs
62	2.35% x (FAS1 – \$1,400) x Yrs
65 & Over	2.61% x (FAS1 – \$1,400) x Yrs

*General Tier 1 and Tier 3
(Enhanced) (§31676.16)*

Retirement Age	Benefit Formula
50	1.43% x (FAS1 – \$1,400) x Yrs
55	2.00% x (FAS1 – \$1,400) x Yrs
60	2.26% x (FAS1 – \$1,400) x Yrs
62	2.37% x (FAS1 – \$1,400) x Yrs
65 & Over	2.42% x (FAS1 – \$1,400) x Yrs

For members previously covered under the non-enhanced §31676.11 formula, they are entitled to at least the benefits they could have received under §31676.11.

General Tier 2 (§31752)

Retirement Age	Benefit Formula
50	0.83% x FAS3 x Yrs – 0.57% x Yrs30 x PIA
55	1.13% x FAS3 x Yrs – 0.87% x Yrs30 x PIA
60	1.43% x FAS3 x Yrs – 1.37% x Yrs30 x PIA
62	1.55% x FAS3 x Yrs – 1.67% x Yrs30 x PIA
65 & Over	1.73% x FAS3 x Yrs – 1.67% x Yrs30 x PIA

*General Tier 4 and Tier 5
(§7522.20(a))*

Retirement Age	Benefit Formula
52	1.00% x FAS3 x Yrs
55	1.30% x FAS3 x Yrs
60	1.80% x FAS3 x Yrs
62	2.00% x FAS3 x Yrs
65	2.30% x FAS3 x Yrs
67 & Over	2.50% x FAS3 x Yrs

Section 4: Actuarial Valuation Basis

Benefit Formula (continued):		
<i>Safety Tier A (Non-Enhanced)</i> (§31664)	Retirement Age	Benefit Formula
	50	2.00% x FAS1 x Yrs
<i>Safety Tier A (Enhanced)</i> (§31664.1)	Retirement Age	Benefit Formula
	55 & Over	2.62% x FAS1 x Yrs
<i>Safety Tier C (Enhanced)</i> (§31664.1)	Retirement Age	Benefit Formula
	50 & Over	3.00% x FAS1 x Yrs
<i>Safety Tier D and Tier E</i> (§7522.25(d))	Retirement Age	Benefit Formula
	50	3.00% x FAS3 x Yrs
	55	2.00% x FAS3 x Yrs
	57 & Over	2.50% x FAS3 x Yrs
<hr/>		
Maximum Benefit:		
<i>General Tier 1 and Tier 3, Safety Tier 1 and Tier C</i>	100% of Final Compensation. (§31676.11, §31676.16, §31664, §31664.1)	
<i>General Tier 2, Tier 4 and Tier 5, Safety Tier D and Tier E</i>	None.	

Section 4: Actuarial Valuation Basis

Non-Service Connected Disability:

General Tier 1 and Tier 4

<i>Eligibility</i>	Five years of service. (§31720)
<i>Benefit Formula</i>	1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to age 65, but the total projected benefit cannot be more than one-third of Final Compensation. (§31727)

General Tier 2, Tier 3 and Tier 5

<i>Eligibility</i>	Ten years of service. (§31720.1)
<i>Benefit Formula</i>	40% of Final Compensation plus 10% of Final Compensation used in the benefit determination for each minor child (maximum of three). (§31727.01)
<i>Offset</i>	Disability benefits are offset by other plans of the employer except Workers Compensation and Social Security.

Safety

<i>Eligibility</i>	Five years of service (§31720).
<i>Benefit Formula</i>	1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to age 55, but the total projected benefit cannot be more than one-third of Final Compensation. (§31727.2)

Service Connected Disability:

General Tier 1 and Tier 4, Safety

<i>Eligibility</i>	No age or service requirements. (§31720)
<i>Benefit Formula</i>	50% of the Final Compensation. (§31727.4)

General Tier 2, Tier 3, and Tier 5

<i>Eligibility</i>	No age or service requirements. (§31720)
<i>Benefit Formula</i>	40% of Final Compensation plus 10% of Final Compensation for each minor child (maximum of three). (§31727.01)
<i>Offset</i>	Disability benefits are offset by other plans of the Employer except Workers Compensation and Social Security.

Section 4: Actuarial Valuation Basis

Pre-Retirement Death:

General Tier 1, Tier 3, Tier 4, and Tier 5, Safety

Eligibility – A

None.

Benefit – A

Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six month's compensation (§31781).

Eligibility – B

Five years of service (Ten years for General Tier 3 and Tier 5).

Benefit – B

Option 2 (100% continuation) of Service Retirement or Non-Service Connected Disability benefit payable to designated beneficiary.

Death in line of duty

50% of Final Compensation payable to spouse. (§31787)

General Tier 2

Eligibility – A

None.

Benefit – A

Refund of employee contributions with interest, plus \$2,000 lump sum benefit offset by any Social Security payment. (§31781.01);

Eligibility – B

Ten years of service.

Benefit – B

Option 2 (100% continuation) of Service Retirement or Non-Service Connected Disability benefit payable to designated beneficiary.

Death in line of duty

60% of Service or Disability Retirement Benefit (minimum benefit is 24% of Final Compensation) plus, for each minor child, 10% of the allowance otherwise paid to the member. Minimum family benefit is 60% of the member's allowance. Maximum family benefit is 100% of member's allowance.

Section 4: Actuarial Valuation Basis

Death After Retirement:

General Tier 1, Tier 3, Tier 4, and Tier 5, Safety

Service Retirement or Non Service Connected Disability Retirement

Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse. An eligible spouse is a surviving spouse who was married to the member at least one year prior to the member's retirement or at least two years prior to the date of death and has attained age 55 on or prior to the date of death. (§31760.2) An additional lump sum benefit of \$5,000 is payable to the member's beneficiary. (§31789.5)

Service Connected Disability

Unless another option was selected at retirement, 100% of member's allowance continued to eligible spouse. (§31786) An additional lump sum benefit of \$5,000 is payable to the member's beneficiary. (§31789.5)

General Tier 2

Service Retirement or Non Service Connected Disability Retirement

Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse plus 20% of allowance to each minor child. (§31789.11) Maximum benefit is 100% of allowance. An additional lump sum benefit of \$5,000 (§31789.5) plus \$2,000 less any Social Security lump sum payment (§31789.01) are payable to the member's beneficiary.

Withdrawal Benefits:

Less than Five Years of Service

Refund of accumulated employee contributions with interest, or earned benefit at age 70. (§31628)

Five or More Years of Service

If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire. (§31700)

Post-Retirement Cost-of-Living Benefits:

General Tier 1, Tier 3 (non-disability), Tier 4, and Tier 5, Safety Tier A and Tier D

Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked."

General Tier 2, Tier 3 (disability) and Tier 5 (disability)

Future changes based on Consumer Price Index to a maximum of 4% per year, excess "banked."

General Tier 4 and Tier 5 (under certain MOUs), Safety Tier C and Tier E

Future changes based on Consumer Price Index to a maximum of 2% per year, excess "banked."

Section 4: Actuarial Valuation Basis

Member Contributions:	Please refer to <i>Section 4, Exhibit III</i> for specific rates.
<i>General Tier 1 and Tier 3 (Non Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for one-half of the \$31676.11 benefit payable at age 55.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>General Tier 1 and Tier 3 (Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for an annuity at age 60 equal to 1/120 of FAS1.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>General Tier 4 and Tier 5</i>	50% of the total Normal Cost rate.
<i>Safety Tier A (Non Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for one-half of the \$31664 benefit payable at age 50.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>Safety Tier A (Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS1.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>Safety Tier C (Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS3.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>Safety Tier D and Tier E</i>	50% of the total Normal Cost rate.
Other Information:	Transfers from Tier 1 to Tier 2 were made on an individual voluntary irrevocable basis. Credit is given under Tier 2 for future service only. The Cost-of-Living maximum is 4% only for the credit under Tier 2. Transferred Tier 2 members keep the five-year requirement for nonservice-connected disability. Those who were members on or before March 7, 1973 and Safety members with membership dates on or before January 1, 2013 will be exempt from paying member contributions after 30 years of service.

Section 4: Actuarial Valuation Basis

Plan Provisions Not Valued:	Additional \$5,000 lump sum post-retirement death benefit (except for \$2,000 for General Tier 2 members paid out of the Valuation Value of Assets) payable to a member's beneficiary. This benefit is paid from a reserve that is not included in the Valuation Value of Assets and is subject at all times to the availability of funds.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

Note: The summary of major plan provisions is designed to outline principal plan benefits as interpreted for purposes of the actuarial valuation. If the Association should find the plan summary not in accordance with the actual provisions, the Association should alert the actuary so they can both be sure the proper provisions are valued.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates

General Cost Group #1 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.71%	5.32%	1.81%	2.72%	5.52%	8.04%
16	3.77%	5.41%	1.85%	2.77%	5.62%	8.18%
17	3.84%	5.51%	1.88%	2.82%	5.72%	8.33%
18	3.90%	5.61%	1.92%	2.88%	5.82%	8.49%
19	3.97%	5.71%	1.96%	2.94%	5.93%	8.65%
20	4.04%	5.81%	1.99%	2.99%	6.03%	8.80%
21	4.10%	5.91%	2.03%	3.05%	6.13%	8.96%
22	4.17%	6.01%	2.07%	3.10%	6.24%	9.11%
23	4.24%	6.12%	2.11%	3.17%	6.35%	9.29%
24	4.32%	6.23%	2.15%	3.23%	6.47%	9.46%
25	4.39%	6.34%	2.19%	3.29%	6.58%	9.63%
26	4.46%	6.45%	2.23%	3.35%	6.69%	9.80%
27	4.54%	6.57%	2.28%	3.42%	6.82%	9.99%
28	4.62%	6.68%	2.32%	3.48%	6.94%	10.16%
29	4.70%	6.80%	2.37%	3.55%	7.07%	10.35%
30	4.78%	6.92%	2.41%	3.62%	7.19%	10.54%
31	4.86%	7.05%	2.46%	3.69%	7.32%	10.74%
32	4.94%	7.17%	2.51%	3.76%	7.45%	10.93%
33	5.03%	7.30%	2.55%	3.83%	7.58%	11.13%
34	5.12%	7.44%	2.61%	3.91%	7.73%	11.35%
35	5.21%	7.57%	2.65%	3.98%	7.86%	11.55%
36	5.30%	7.71%	2.71%	4.06%	8.01%	11.77%
37	5.40%	7.85%	2.76%	4.14%	8.16%	11.99%
38	5.49%	7.99%	2.81%	4.22%	8.30%	12.21%
39	5.59%	8.14%	2.87%	4.30%	8.46%	12.44%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #1 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.69%	8.29%	2.93%	4.39%	8.62%	12.68%
41	5.80%	8.45%	2.99%	4.48%	8.79%	12.93%
42	5.90%	8.60%	3.04%	4.56%	8.94%	13.16%
43	6.00%	8.75%	3.09%	4.64%	9.09%	13.39%
44	6.10%	8.90%	3.15%	4.73%	9.25%	13.63%
45	6.20%	9.06%	3.21%	4.82%	9.41%	13.88%
46	6.31%	9.22%	3.27%	4.91%	9.58%	14.13%
47	6.42%	9.38%	3.33%	5.00%	9.75%	14.38%
48	6.52%	9.53%	3.39%	5.08%	9.91%	14.61%
49	6.62%	9.68%	3.45%	5.17%	10.07%	14.85%
50	6.72%	9.84%	3.51%	5.26%	10.23%	15.10%
51	6.83%	10.00%	3.57%	5.35%	10.40%	15.35%
52	6.94%	10.16%	3.63%	5.44%	10.57%	15.60%
53	7.04%	10.32%	3.69%	5.53%	10.73%	15.85%
54	7.15%	10.48%	3.75%	5.62%	10.90%	16.10%
55	7.25%	10.63%	3.80%	5.70%	11.05%	16.33%
56	7.30%	10.70%	3.83%	5.74%	11.13%	16.44%
57	7.28%	10.67%	3.81%	5.72%	11.09%	16.39%
58	7.26%	10.64%	3.81%	5.71%	11.07%	16.35%
59 & Over	7.05%	10.33%	3.69%	5.53%	10.74%	15.86%

Interest: 7.00% per annum
Mortality: See Section 4, Exhibit I
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 1.00%
COLA Loading Factor: 56.23%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #2 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.70%	5.31%	1.57%	2.36%	5.27%	7.67%
16	3.76%	5.40%	1.60%	2.40%	5.36%	7.80%
17	3.83%	5.50%	1.63%	2.45%	5.46%	7.95%
18	3.89%	5.59%	1.67%	2.50%	5.56%	8.09%
19	3.96%	5.69%	1.70%	2.55%	5.66%	8.24%
20	4.02%	5.79%	1.73%	2.59%	5.75%	8.38%
21	4.10%	5.90%	1.77%	2.65%	5.87%	8.55%
22	4.16%	6.00%	1.80%	2.70%	5.96%	8.70%
23	4.24%	6.11%	1.83%	2.75%	6.07%	8.86%
24	4.31%	6.22%	1.87%	2.81%	6.18%	9.03%
25	4.38%	6.33%	1.91%	2.86%	6.29%	9.19%
26	4.46%	6.44%	1.94%	2.91%	6.40%	9.35%
27	4.53%	6.55%	1.98%	2.97%	6.51%	9.52%
28	4.61%	6.67%	2.02%	3.03%	6.63%	9.70%
29	4.69%	6.79%	2.05%	3.08%	6.74%	9.87%
30	4.77%	6.91%	2.09%	3.14%	6.86%	10.05%
31	4.85%	7.03%	2.13%	3.20%	6.98%	10.23%
32	4.94%	7.16%	2.18%	3.27%	7.12%	10.43%
33	5.02%	7.29%	2.22%	3.33%	7.24%	10.62%
34	5.11%	7.42%	2.26%	3.39%	7.37%	10.81%
35	5.20%	7.55%	2.31%	3.46%	7.51%	11.01%
36	5.29%	7.69%	2.35%	3.53%	7.64%	11.22%
37	5.38%	7.83%	2.39%	3.59%	7.77%	11.42%
38	5.48%	7.98%	2.45%	3.67%	7.93%	11.65%
39	5.58%	8.13%	2.49%	3.74%	8.07%	11.87%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #2 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.68%	8.27%	2.54%	3.81%	8.22%	12.08%
41	5.78%	8.42%	2.59%	3.88%	8.37%	12.30%
42	5.88%	8.58%	2.64%	3.96%	8.52%	12.54%
43	5.98%	8.73%	2.69%	4.03%	8.67%	12.76%
44	6.08%	8.88%	2.74%	4.11%	8.82%	12.99%
45	6.19%	9.04%	2.79%	4.19%	8.98%	13.23%
46	6.30%	9.20%	2.84%	4.26%	9.14%	13.46%
47	6.40%	9.36%	2.89%	4.34%	9.29%	13.70%
48	6.50%	9.50%	2.94%	4.41%	9.44%	13.91%
49	6.61%	9.67%	2.99%	4.49%	9.60%	14.16%
50	6.71%	9.82%	3.05%	4.57%	9.76%	14.39%
51	6.82%	9.98%	3.10%	4.65%	9.92%	14.63%
52	6.92%	10.14%	3.15%	4.72%	10.07%	14.86%
53	7.05%	10.33%	3.21%	4.82%	10.26%	15.15%
54	7.13%	10.45%	3.25%	4.88%	10.38%	15.33%
55	7.22%	10.59%	3.29%	4.94%	10.51%	15.53%
56	7.30%	10.70%	3.33%	5.00%	10.63%	15.70%
57	7.28%	10.68%	3.33%	4.99%	10.61%	15.67%
58	7.27%	10.66%	3.32%	4.98%	10.59%	15.64%
59 & Over	6.86%	10.05%	3.12%	4.68%	9.98%	14.73%

Interest: 7.00% per annum

Mortality: See Section 4, Exhibit I

Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)

Administrative Expense: 0.49% of payroll added to Basic rates

Leave Cashout: 0.75%

COLA Loading Factor: 48.96%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #3 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	5.50%	2.73%	8.23%
16	5.59%	2.78%	8.37%
17	5.69%	2.83%	8.52%
18	5.79%	2.89%	8.68%
19	5.90%	2.95%	8.85%
20	6.00%	3.00%	9.00%
21	6.11%	3.06%	9.17%
22	6.22%	3.12%	9.34%
23	6.33%	3.18%	9.51%
24	6.44%	3.24%	9.68%
25	6.55%	3.30%	9.85%
26	6.67%	3.37%	10.04%
27	6.79%	3.43%	10.22%
28	6.91%	3.50%	10.41%
29	7.03%	3.56%	10.59%
30	7.16%	3.63%	10.79%
31	7.29%	3.71%	11.00%
32	7.42%	3.78%	11.20%
33	7.55%	3.85%	11.40%
34	7.68%	3.92%	11.60%
35	7.82%	3.99%	11.81%
36	7.97%	4.08%	12.05%
37	8.11%	4.15%	12.26%
38	8.26%	4.23%	12.49%
39	8.42%	4.32%	12.74%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #3 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	8.57%	4.40%	12.97%
41	8.73%	4.49%	13.22%
42	8.88%	4.57%	13.45%
43	9.04%	4.66%	13.70%
44	9.20%	4.75%	13.95%
45	9.37%	4.84%	14.21%
46	9.52%	4.92%	14.44%
47	9.68%	5.01%	14.69%
48	9.84%	5.09%	14.93%
49	10.00%	5.18%	15.18%
50	10.16%	5.27%	15.43%
51	10.32%	5.36%	15.68%
52	10.49%	5.45%	15.94%
53	10.65%	5.54%	16.19%
54	10.79%	5.61%	16.40%
55	10.89%	5.67%	16.56%
56	11.00%	5.73%	16.73%
57	10.96%	5.71%	16.67%
58	10.72%	5.57%	16.29%
59 & Over	10.28%	5.33%	15.61%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 4.75%
COLA Loading Factor: 54.49%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #4 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.69%	5.29%	1.75%	2.63%	5.44%	7.92%
16	3.76%	5.39%	1.79%	2.69%	5.55%	8.08%
17	3.82%	5.48%	1.83%	2.74%	5.65%	8.22%
18	3.88%	5.58%	1.86%	2.79%	5.74%	8.37%
19	3.95%	5.68%	1.90%	2.85%	5.85%	8.53%
20	4.02%	5.78%	1.93%	2.90%	5.95%	8.68%
21	4.08%	5.88%	1.97%	2.96%	6.05%	8.84%
22	4.16%	5.99%	2.01%	3.02%	6.17%	9.01%
23	4.22%	6.09%	2.05%	3.07%	6.27%	9.16%
24	4.30%	6.20%	2.09%	3.13%	6.39%	9.33%
25	4.37%	6.31%	2.13%	3.19%	6.50%	9.50%
26	4.44%	6.42%	2.17%	3.25%	6.61%	9.67%
27	4.52%	6.54%	2.21%	3.32%	6.73%	9.86%
28	4.60%	6.65%	2.25%	3.38%	6.85%	10.03%
29	4.68%	6.77%	2.30%	3.45%	6.98%	10.22%
30	4.76%	6.89%	2.34%	3.51%	7.10%	10.40%
31	4.84%	7.02%	2.39%	3.58%	7.23%	10.60%
32	4.92%	7.14%	2.43%	3.65%	7.35%	10.79%
33	5.01%	7.27%	2.48%	3.72%	7.49%	10.99%
34	5.10%	7.40%	2.53%	3.79%	7.63%	11.19%
35	5.19%	7.54%	2.58%	3.87%	7.77%	11.41%
36	5.28%	7.67%	2.63%	3.94%	7.91%	11.61%
37	5.37%	7.81%	2.68%	4.02%	8.05%	11.83%
38	5.47%	7.96%	2.73%	4.10%	8.20%	12.06%
39	5.57%	8.11%	2.79%	4.18%	8.36%	12.29%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #4 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.67%	8.26%	2.84%	4.26%	8.51%	12.52%
41	5.77%	8.41%	2.90%	4.35%	8.67%	12.76%
42	5.87%	8.56%	2.95%	4.43%	8.82%	12.99%
43	5.97%	8.71%	3.01%	4.51%	8.98%	13.22%
44	6.07%	8.86%	3.06%	4.59%	9.13%	13.45%
45	6.18%	9.03%	3.13%	4.69%	9.31%	13.72%
46	6.28%	9.18%	3.18%	4.77%	9.46%	13.95%
47	6.38%	9.33%	3.23%	4.85%	9.61%	14.18%
48	6.48%	9.48%	3.29%	4.93%	9.77%	14.41%
49	6.60%	9.65%	3.35%	5.03%	9.95%	14.68%
50	6.69%	9.79%	3.40%	5.10%	10.09%	14.89%
51	6.80%	9.96%	3.47%	5.20%	10.27%	15.16%
52	6.91%	10.12%	3.53%	5.29%	10.44%	15.41%
53	7.03%	10.30%	3.59%	5.38%	10.62%	15.68%
54	7.13%	10.45%	3.65%	5.47%	10.78%	15.92%
55	7.22%	10.59%	3.69%	5.54%	10.91%	16.13%
56	7.26%	10.65%	3.72%	5.58%	10.98%	16.23%
57	7.29%	10.69%	3.73%	5.60%	11.02%	16.29%
58	7.18%	10.53%	3.67%	5.51%	10.85%	16.04%
59 & Over	6.88%	10.07%	3.51%	5.26%	10.39%	15.33%

Interest: 7.00% per annum
Mortality: See Section 4, Exhibit I
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 54.89%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #5 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	5.33%	2.84%	8.17%
16	5.42%	2.89%	8.31%
17	5.52%	2.95%	8.47%
18	5.62%	3.01%	8.63%
19	5.72%	3.07%	8.79%
20	5.82%	3.13%	8.95%
21	5.92%	3.19%	9.11%
22	6.03%	3.25%	9.28%
23	6.13%	3.31%	9.44%
24	6.24%	3.38%	9.62%
25	6.35%	3.44%	9.79%
26	6.47%	3.51%	9.98%
27	6.58%	3.58%	10.16%
28	6.70%	3.65%	10.35%
29	6.82%	3.72%	10.54%
30	6.94%	3.79%	10.73%
31	7.06%	3.86%	10.92%
32	7.19%	3.93%	11.12%
33	7.32%	4.01%	11.33%
34	7.45%	4.09%	11.54%
35	7.59%	4.17%	11.76%
36	7.72%	4.25%	11.97%
37	7.87%	4.33%	12.20%
38	8.01%	4.42%	12.43%
39	8.16%	4.50%	12.66%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost General Cost Group #5 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	8.31%	4.59%	12.90%
41	8.47%	4.69%	13.16%
42	8.62%	4.77%	13.39%
43	8.77%	4.86%	13.63%
44	8.92%	4.95%	13.87%
45	9.08%	5.04%	14.12%
46	9.24%	5.14%	14.38%
47	9.40%	5.23%	14.63%
48	9.55%	5.32%	14.87%
49	9.71%	5.41%	15.12%
50	9.87%	5.51%	15.38%
51	10.03%	5.60%	15.63%
52	10.18%	5.69%	15.87%
53	10.35%	5.79%	16.14%
54	10.51%	5.88%	16.39%
55	10.62%	5.95%	16.57%
56	10.69%	5.99%	16.68%
57	10.75%	6.02%	16.77%
58	10.63%	5.95%	16.58%
59 & Over	10.31%	5.77%	16.08%

Interest: 7.00% per annum

Mortality: See *Section 4, Exhibit I*

Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)

Administrative Expense: 0.49% of payroll added to Basic rates

Leave Cashout: 1.25%

COLA Loading Factor: 58.72%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #6 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	4.20%	6.05%	1.63%	2.44%	5.83%	8.49%
16	4.27%	6.16%	1.66%	2.49%	5.93%	8.65%
17	4.34%	6.26%	1.69%	2.53%	6.03%	8.79%
18	4.42%	6.38%	1.73%	2.59%	6.15%	8.97%
19	4.49%	6.49%	1.75%	2.63%	6.24%	9.12%
20	4.57%	6.61%	1.79%	2.69%	6.36%	9.30%
21	4.64%	6.72%	1.82%	2.73%	6.46%	9.45%
22	4.72%	6.84%	1.86%	2.79%	6.58%	9.63%
23	4.80%	6.96%	1.89%	2.84%	6.69%	9.80%
24	4.89%	7.09%	1.93%	2.90%	6.82%	9.99%
25	4.98%	7.22%	1.97%	2.95%	6.95%	10.17%
26	5.06%	7.35%	2.01%	3.01%	7.07%	10.36%
27	5.15%	7.48%	2.05%	3.07%	7.20%	10.55%
28	5.24%	7.61%	2.09%	3.13%	7.33%	10.74%
29	5.33%	7.75%	2.13%	3.19%	7.46%	10.94%
30	5.42%	7.89%	2.17%	3.25%	7.59%	11.14%
31	5.52%	8.03%	2.21%	3.31%	7.73%	11.34%
32	5.62%	8.19%	2.25%	3.38%	7.87%	11.57%
33	5.72%	8.33%	2.29%	3.44%	8.01%	11.77%
34	5.82%	8.49%	2.34%	3.51%	8.16%	12.00%
35	5.93%	8.65%	2.39%	3.58%	8.32%	12.23%
36	6.04%	8.81%	2.43%	3.65%	8.47%	12.46%
37	6.14%	8.97%	2.48%	3.72%	8.62%	12.69%
38	6.25%	9.13%	2.53%	3.79%	8.78%	12.92%
39	6.36%	9.29%	2.57%	3.86%	8.93%	13.15%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Cost Group #6 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	6.47%	9.46%	2.63%	3.94%	9.10%	13.40%
41	6.58%	9.62%	2.67%	4.01%	9.25%	13.63%
42	6.68%	9.78%	2.72%	4.08%	9.40%	13.86%
43	6.80%	9.95%	2.77%	4.15%	9.57%	14.10%
44	6.90%	10.11%	2.81%	4.22%	9.71%	14.33%
45	7.01%	10.27%	2.86%	4.29%	9.87%	14.56%
46	7.13%	10.45%	2.91%	4.37%	10.04%	14.82%
47	7.24%	10.61%	2.96%	4.44%	10.20%	15.05%
48	7.36%	10.80%	3.02%	4.53%	10.38%	15.33%
49	7.46%	10.95%	3.06%	4.59%	10.52%	15.54%
50	7.56%	11.09%	3.10%	4.65%	10.66%	15.74%
51	7.63%	11.20%	3.13%	4.70%	10.76%	15.90%
52	7.60%	11.15%	3.12%	4.68%	10.72%	15.83%
53	7.54%	11.07%	3.09%	4.64%	10.63%	15.71%
54 & Over	7.24%	10.61%	2.96%	4.44%	10.20%	15.05%

Interest: 7.00% per annum

Mortality: See Section 4, Exhibit I

Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)

Administrative Expense: 0.49% of payroll added to Basic rates

Leave Cashout: 0.25%

COLA Loading Factor: 43.90%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #7 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.48%	6.29%	15.77%
16	9.48%	6.29%	15.77%
17	9.48%	6.29%	15.77%
18	9.48%	6.29%	15.77%
19	9.48%	6.29%	15.77%
20	9.48%	6.29%	15.77%
21	9.48%	6.29%	15.77%
22	9.62%	6.39%	16.01%
23	9.76%	6.49%	16.25%
24	9.91%	6.59%	16.50%
25	10.06%	6.70%	16.76%
26	10.21%	6.80%	17.01%
27	10.37%	6.91%	17.28%
28	10.52%	7.02%	17.54%
29	10.68%	7.13%	17.81%
30	10.85%	7.25%	18.10%
31	11.02%	7.37%	18.39%
32	11.19%	7.49%	18.68%
33	11.37%	7.61%	18.98%
34	11.55%	7.74%	19.29%
35	11.74%	7.87%	19.61%
36	11.93%	8.01%	19.94%
37	12.12%	8.14%	20.26%
38	12.31%	8.27%	20.58%
39	12.52%	8.42%	20.94%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #7 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.74%	8.57%	21.31%
41	12.95%	8.72%	21.67%
42	13.18%	8.88%	22.06%
43	13.41%	9.04%	22.45%
44	13.67%	9.22%	22.89%
45	13.89%	9.38%	23.27%
46	13.91%	9.39%	23.30%
47	13.94%	9.41%	23.35%
48	13.75%	9.28%	23.03%
49 & Over	13.23%	8.92%	22.15%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.75%
COLA Loading Factor: 69.98%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #8 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.46%	6.42%	15.88%
16	9.46%	6.42%	15.88%
17	9.46%	6.42%	15.88%
18	9.46%	6.42%	15.88%
19	9.46%	6.42%	15.88%
20	9.46%	6.42%	15.88%
21	9.46%	6.42%	15.88%
22	9.60%	6.52%	16.12%
23	9.74%	6.62%	16.36%
24	9.89%	6.72%	16.61%
25	10.04%	6.83%	16.87%
26	10.19%	6.94%	17.13%
27	10.34%	7.05%	17.39%
28	10.50%	7.16%	17.66%
29	10.66%	7.27%	17.93%
30	10.82%	7.39%	18.21%
31	10.99%	7.51%	18.50%
32	11.17%	7.64%	18.81%
33	11.34%	7.76%	19.10%
34	11.53%	7.90%	19.43%
35	11.72%	8.03%	19.75%
36	11.90%	8.16%	20.06%
37	12.10%	8.30%	20.40%
38	12.29%	8.44%	20.73%
39	12.49%	8.58%	21.07%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #8 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.71%	8.74%	21.45%
41	12.93%	8.90%	21.83%
42	13.16%	9.06%	22.22%
43	13.39%	9.23%	22.62%
44	13.64%	9.41%	23.05%
45	13.85%	9.56%	23.41%
46	13.92%	9.61%	23.53%
47	13.86%	9.56%	23.42%
48	13.77%	9.50%	23.27%
49 & Over	13.26%	9.13%	22.39%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 71.53%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #9 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.06%	3.89%	12.95%
16	9.06%	3.89%	12.95%
17	9.06%	3.89%	12.95%
18	9.06%	3.89%	12.95%
19	9.06%	3.89%	12.95%
20	9.06%	3.89%	12.95%
21	9.06%	3.89%	12.95%
22	9.19%	3.95%	13.14%
23	9.33%	4.01%	13.34%
24	9.47%	4.07%	13.54%
25	9.61%	4.14%	13.75%
26	9.75%	4.20%	13.95%
27	9.90%	4.27%	14.17%
28	10.05%	4.34%	14.39%
29	10.20%	4.40%	14.60%
30	10.36%	4.48%	14.84%
31	10.52%	4.55%	15.07%
32	10.69%	4.63%	15.32%
33	10.86%	4.70%	15.56%
34	11.03%	4.78%	15.81%
35	11.20%	4.86%	16.06%
36	11.38%	4.94%	16.32%
37	11.56%	5.02%	16.58%
38	11.73%	5.10%	16.83%
39	11.93%	5.19%	17.12%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #9 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.12%	5.28%	17.40%
41	12.31%	5.36%	17.67%
42	12.51%	5.45%	17.96%
43	12.68%	5.53%	18.21%
44	12.78%	5.57%	18.35%
45	12.79%	5.58%	18.37%
46	12.67%	5.52%	18.19%
47	12.41%	5.41%	17.82%
48	12.74%	5.56%	18.30%
49 & Over	13.32%	5.82%	19.14%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.00%
COLA Loading Factor: 45.36%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #10 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.46%	6.33%	15.79%
16	9.46%	6.33%	15.79%
17	9.46%	6.33%	15.79%
18	9.46%	6.33%	15.79%
19	9.46%	6.33%	15.79%
20	9.46%	6.33%	15.79%
21	9.46%	6.33%	15.79%
22	9.60%	6.43%	16.03%
23	9.74%	6.53%	16.27%
24	9.89%	6.63%	16.52%
25	10.04%	6.74%	16.78%
26	10.19%	6.85%	17.04%
27	10.34%	6.95%	17.29%
28	10.50%	7.07%	17.57%
29	10.66%	7.18%	17.84%
30	10.82%	7.29%	18.11%
31	10.99%	7.41%	18.40%
32	11.17%	7.54%	18.71%
33	11.34%	7.66%	19.00%
34	11.53%	7.79%	19.32%
35	11.72%	7.93%	19.65%
36	11.90%	8.05%	19.95%
37	12.10%	8.19%	20.29%
38	12.29%	8.33%	20.62%
39	12.49%	8.47%	20.96%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #10 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.71%	8.62%	21.33%
41	12.93%	8.78%	21.71%
42	13.16%	8.94%	22.10%
43	13.39%	9.10%	22.49%
44	13.64%	9.28%	22.92%
45	13.85%	9.43%	23.28%
46	13.92%	9.48%	23.40%
47	13.86%	9.44%	23.30%
48	13.77%	9.37%	23.14%
49 & Over	13.26%	9.01%	22.27%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 70.58%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #11 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.63%	6.69%	16.32%
16	9.63%	6.69%	16.32%
17	9.63%	6.69%	16.32%
18	9.63%	6.69%	16.32%
19	9.63%	6.69%	16.32%
20	9.63%	6.69%	16.32%
21	9.63%	6.69%	16.32%
22	9.78%	6.80%	16.58%
23	9.92%	6.90%	16.82%
24	10.07%	7.01%	17.08%
25	10.22%	7.12%	17.34%
26	10.38%	7.24%	17.62%
27	10.53%	7.35%	17.88%
28	10.69%	7.47%	18.16%
29	10.85%	7.59%	18.44%
30	11.02%	7.71%	18.73%
31	11.19%	7.83%	19.02%
32	11.37%	7.97%	19.34%
33	11.55%	8.10%	19.65%
34	11.74%	8.24%	19.98%
35	11.92%	8.37%	20.29%
36	12.11%	8.51%	20.62%
37	12.31%	8.65%	20.96%
38	12.51%	8.80%	21.31%
39	12.71%	8.95%	21.66%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #11 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.92%	9.10%	22.02%
41	13.14%	9.26%	22.40%
42	13.37%	9.43%	22.80%
43	13.61%	9.61%	23.22%
44	13.84%	9.77%	23.61%
45	14.07%	9.94%	24.01%
46	14.10%	9.97%	24.07%
47	14.04%	9.92%	23.96%
48	13.78%	9.73%	23.51%
49 & Over	13.01%	9.17%	22.18%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 2.50%
COLA Loading Factor: 73.22%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #12 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.59%	4.94%	14.53%
16	9.59%	4.94%	14.53%
17	9.59%	4.94%	14.53%
18	9.59%	4.94%	14.53%
19	9.59%	4.94%	14.53%
20	9.59%	4.94%	14.53%
21	9.59%	4.94%	14.53%
22	9.73%	5.01%	14.74%
23	9.88%	5.10%	14.98%
24	10.02%	5.17%	15.19%
25	10.18%	5.26%	15.44%
26	10.33%	5.34%	15.67%
27	10.48%	5.42%	15.90%
28	10.64%	5.51%	16.15%
29	10.80%	5.59%	16.39%
30	10.97%	5.69%	16.66%
31	11.14%	5.78%	16.92%
32	11.32%	5.88%	17.20%
33	11.49%	5.97%	17.46%
34	11.68%	6.07%	17.75%
35	11.88%	6.18%	18.06%
36	12.06%	6.28%	18.34%
37	12.25%	6.38%	18.63%
38	12.45%	6.49%	18.94%
39	12.66%	6.60%	19.26%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #12 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.88%	6.72%	19.60%
41	13.09%	6.84%	19.93%
42	13.33%	6.97%	20.30%
43	13.56%	7.09%	20.65%
44	13.78%	7.21%	20.99%
45	13.99%	7.33%	21.32%
46	14.05%	7.36%	21.41%
47	13.97%	7.31%	21.28%
48	13.81%	7.23%	21.04%
49 & Over	13.07%	6.83%	19.90%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 2.00%
COLA Loading Factor: 54.26%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #13 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.46%	6.30%	15.76%
16	9.46%	6.30%	15.76%
17	9.46%	6.30%	15.76%
18	9.46%	6.30%	15.76%
19	9.46%	6.30%	15.76%
20	9.46%	6.30%	15.76%
21	9.46%	6.30%	15.76%
22	9.60%	6.40%	16.00%
23	9.74%	6.50%	16.24%
24	9.89%	6.60%	16.49%
25	10.04%	6.71%	16.75%
26	10.19%	6.81%	17.00%
27	10.34%	6.92%	17.26%
28	10.50%	7.03%	17.53%
29	10.66%	7.14%	17.80%
30	10.82%	7.26%	18.08%
31	10.99%	7.38%	18.37%
32	11.17%	7.50%	18.67%
33	11.34%	7.62%	18.96%
34	11.53%	7.75%	19.28%
35	11.72%	7.89%	19.61%
36	11.90%	8.01%	19.91%
37	12.10%	8.15%	20.25%
38	12.29%	8.29%	20.58%
39	12.49%	8.43%	20.92%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #13 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.71%	8.58%	21.29%
41	12.93%	8.74%	21.67%
42	13.16%	8.90%	22.06%
43	13.39%	9.06%	22.45%
44	13.64%	9.24%	22.88%
45	13.85%	9.38%	23.23%
46	13.92%	9.43%	23.35%
47	13.86%	9.39%	23.25%
48	13.77%	9.33%	23.10%
49 & Over	13.26%	8.97%	22.23%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 70.24%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

General Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates On or After January 1, 2013

	Basic	COLA	Total
Cost Group #1 – PEPRA Tier 4 (2% COLA)	8.81%	2.01%	10.82%
Cost Group #1 – PEPRA Tier 4 (3% COLA)	9.07%	3.04%	12.11%
Cost Group #2 - PEPRA Tier 5 (2% COLA)	8.21%	1.85%	10.06%
Cost Group #2 - PEPRA Tier 5 (3%/4% COLA)	8.38%	2.77%	11.15%
Cost Group #3 - PEPRA Tier 4 (3% COLA)	8.41%	2.89%	11.30%
Cost Group #4 - PEPRA Tier 4 (3% COLA)	8.86%	2.99%	11.85%
Cost Group #5 - PEPRA Tier 4 (2% COLA)	10.25%	2.29%	12.54%
Cost Group #5 - PEPRA Tier 4 (3% COLA)	11.09%	3.71%	14.80%
Cost Group #6 - PEPRA Tier 4 (3% COLA)	9.87%	3.32%	13.19%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.49% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the maximum compensation that can be taken into account for 2021 is equal to \$128,059; for an employer that is not enrolled in Social Security, the maximum amount is \$153,671. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2021. (§7522.10(d))

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates On or After January 1, 2013

	Basic	COLA	Total
Cost Group #7 - PEPRA Tier D	14.12%	5.67%	19.79%
Cost Group #8 - PEPRA Tier D	12.12%	5.00%	17.12%
Cost Group #8 - PEPRA Tier E	12.01%	3.30%	15.31%
Cost Group #9 - PEPRA Tier E	13.26%	3.58%	16.84%
Cost Group #10 - PEPRA Tier D	12.29%	5.08%	17.37%
Cost Group #11 - PEPRA Tier D	11.27%	4.64%	15.91%
Cost Group #12 - PEPRA Tier D	11.62%	4.80%	16.42%
Cost Group #13 - PEPRA Tier D	12.74%	5.23%	17.97%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.49% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the maximum compensation that can be taken into account for 2021 is equal to \$128,059; for an employer that is not enrolled in Social Security, the maximum amount is \$153,671. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2021. (§7522.10(d))

Section 4: Actuarial Valuation Basis

Exhibit IV: Refundability Factors

		December 31, 2020		December 31, 2019	
		Legacy Tiers	PEPRA Tiers	Legacy Tiers	PEPRA Tiers
General					
Cost Group #1 –	County and Small Districts (Tier 1)	0.9693		0.9682	
	PEPRA Tier 4 (2% COLA)		0.9591		0.9587
	PEPRA Tier 4 (3% COLA)		0.9625		0.9609
Cost Group #2 –	County and Small Districts (Tier 3)	0.9570		0.9561	
	PEPRA Tier 5 (2% COLA)		0.9581		0.9582
	PEPRA Tier 5 (3%/4% COLA)		0.9615		0.9607
Cost Group #3 –	Central Contra Costa Sanitary District	0.9624	0.9678	0.9609	0.9667
Cost Group #4 –	Contra Costa Housing Authority	0.9622	0.9649	0.9609	0.9662
Cost Group #5 –	Contra Costa County Fire Protection District	0.9787		0.9752	
	PEPRA Tier 4 (2% COLA)		0.9548		0.9541
	PEPRA Tier 4 (3% COLA)		0.9602		0.9581
Cost Group #6 –	Small Districts (Non-Enhanced Tier 1 and 4)	0.9508	0.9548	0.9496	0.9651
Safety					
Cost Group #7 –	County (Tier A and D)	0.9630	0.9719	0.9621	0.9711
Cost Group #8 –	Contra Costa Fire Protection District	0.9694		0.9674	
	PEPRA Tier D (3% COLA)		0.9754		0.9755
	PEPRA Tier E (2% COLA)		0.9719		0.9706
Cost Group #9 –	County (Tier C and E)	0.9626	0.9696	0.9628	0.9698
Cost Group #10 –	Moraga-Orinda Fire District	0.9651	0.9723	0.9654	0.9721
Cost Group #11 –	San Ramon Valley Fire District	0.9697	0.9748	0.9682	0.9747
Cost Group #12 –	Rodeo-Hercules Fire Protection District	0.9817	0.9769	0.9651	0.9771
Cost Group #13 –	East Contra Costa Fire Protection District	0.9598	0.9783	0.9561	0.9763

Section 4: Actuarial Valuation Basis

Exhibit V: Summary of Cost Groups and Employers

General			
Cost Group	Employer Name	Benefit Structure	Special Adjustment
1	County General	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Local Agency Formation Commission	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Contra Costa Mosquito and Vector Control District	Tier 1 Enhanced/PEPRA Tier 4	
	Bethel Island Municipal District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	First 5-Children & Families Commission	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Contra Costa County Employees' Retirement Association	Tier 1 Enhanced/PEPRA Tier 4	
	Superior Court	Tier 1 Enhanced/PEPRA Tier 4	Yes
	East Contra Costa Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	Moraga-Orinda Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Rodeo-Hercules Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	San Ramon Valley Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
2	County General	Tier 3 Enhanced/PEPRA Tier 5	Yes
	In-Home Supportive Services Authority	Tier 3 Enhanced/PEPRA Tier 5	
	Contra Costa Mosquito and Vector Control District	Tier 3 Enhanced/PEPRA Tier 5	
	Superior Court	Tier 3 Enhanced/PEPRA Tier 5	Yes
3	Central Contra Costa Sanitary District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
4	Contra Costa Housing Authority	Tier 1 Enhanced/PEPRA Tier 4	
5	Contra Costa County Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
6	Rodeo Sanitary District	Tier 1 Non-Enhanced/PEPRA Tier 4	
	Byron Brentwood Cemetery	Tier 1 Non-Enhanced/PEPRA Tier 4	

Note: A special adjustment is made for employers that have a remaining balance of a Pension Obligation Bond or any other special contributions as described on page 122.

Section 4: Actuarial Valuation Basis

Exhibit V: Summary of Cost Groups and Employers (continued)

Safety			
Cost Group	Employer Name	Benefit Structure	Special Adjustment
7	County Safety	Tier A Enhanced/PEPRA Tier D	
8	Contra Costa County Fire Protection District	Tier A Enhanced/PEPRA Tier D/E	
9	County Safety	Tier C Enhanced/PEPRA Tier E (Members hired on or after January 1, 2007)	
10	Moraga-Orinda Fire District	Tier A Enhanced/PEPRA Tier D	
11	San Ramon Valley Fire District	Tier A Enhanced/PEPRA Tier D	
12	Rodeo-Hercules Fire Protection District	Tier A Non-Enhanced/PEPRA Tier D	
13	East Contra Costa Fire Protection District	Tier A Enhanced/PEPRA Tier D	

Note: A special adjustment is made for employers that have a remaining balance of a Pension Obligation Bond or any other special contributions as described on page 122.

Section 4: Actuarial Valuation Basis

Exhibit VI: Allocation of Valuation Value of Assets as of December 31, 2020

	Cost Groups #1 and #2 General County and Small Districts	Cost Group #3 Central Contra Costa Sanitary District	Cost Group #4 Contra Costa Housing Authority	Cost Group #5 Contra Costa County Fire Protection District	Cost Group #6 Small Districts (General Non- Enhanced)
1 Allocated Valuation Value of Assets as of Beginning of Year	\$5,138,726,608	\$360,365,704	\$59,428,407	\$52,784,560	\$7,677,780
2 Contributions: ¹					
a. Total Member Contributions	\$76,188,079	\$4,166,661	\$665,674	\$755,967	\$123,918
b. Employer Contributions - Excludes POB and other Special Contributions	185,978,192	18,339,277	2,469,111	2,129,674	145,812
c. Employer Contributions - Special (POB, Termination, etc.)	<u>30,000</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
d. Total Contributions	\$262,196,271	\$22,505,938	\$3,134,785	\$2,885,641	\$269,730
3 Total Payments Excluding Post-Retirement Death	276,746,422	22,026,610	3,459,598	3,608,229	483,565
4 Administrative Expenses ²	<u>8,946,840</u>	<u>480,223</u>	<u>74,177</u>	<u>80,599</u>	<u>11,949</u>
5 Subtotal 1 + 2d – 3 – 4	\$5,115,229,617	\$360,364,809	\$59,029,417	\$51,981,373	\$7,451,996
6 Weighted Average Fund Balance	5,126,991,222	360,365,257	59,228,912	52,382,967	7,564,888
7 Earnings Allocated in Proportion to 6	<u>339,387,245</u>	<u>23,854,804</u>	<u>3,920,728</u>	<u>3,467,552</u>	<u>500,767</u>
8 Allocated Valuation Value of Assets as of End of Year 5 + 7	\$5,454,616,862	\$384,219,613	\$62,950,145	\$55,448,925	\$7,952,763

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit VI: Allocation of Valuation Value of Assets as of December 31, 2020 (continued)

	Cost Groups #7 & 9 Safety County	Cost Group #8 Contra Costa Fire Protection District	Cost Group #10 Moraga-Orinda Fire District	Cost Group #11 San Ramon Valley Fire District
1 Allocated Valuation Value of Assets as of Beginning of Year	\$1,881,311,034	\$904,066,520	\$171,894,884	\$415,055,844
2 Contributions: ¹				
a. Total Member Contributions	\$18,240,451	\$7,228,147	\$1,432,054	\$3,718,079
b. Employer Contributions - Excludes POB and other Special Contributions	68,542,604	28,255,754	5,767,834	16,642,533
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>260,000</u>
d. Total Contributions	\$86,783,055	\$35,483,901	\$7,199,888	\$20,620,612
3 Total Payments Excluding Post-Retirement Death	99,335,869	60,338,171	11,243,688	20,156,288
4 Administrative Expenses ²	<u>1,304,648</u>	<u>517,343</u>	<u>104,734</u>	<u>286,183</u>
5 Subtotal 1 + 2d – 3 – 4	\$1,867,453,572	\$878,694,907	\$167,746,350	\$415,233,985
6 Weighted Average Fund Balance	1,874,382,303	891,380,714	169,820,617	415,124,613
7 Earnings Allocated in Proportion to 6	<u>124,076,953</u>	<u>59,006,000</u>	<u>11,241,477</u>	<u>27,479,665</u>
8 Allocated Valuation Value of Assets as of End of Year 5 + 7	\$1,991,530,525	\$937,700,907	\$178,987,827	\$442,713,650

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit VI: Allocation of Valuation Value of Assets as of December 31, 2020 (continued)

	Cost Group #12 Rodeo-Hercules Fire Protection District	Cost Group #13 East Contra Costa Fire Protection District	Terminated Employers	Total
1 Allocated Valuation Value of Assets as of Beginning of Year	\$37,541,139	\$45,017,492	\$54,798,746	\$9,128,668,718
2 Contributions: ¹				
a. Total Member Contributions	\$271,913	\$703,248	\$0	\$113,494,191
b. Employer Contributions - Excludes POB and other Special Contributions	2,138,737	4,590,031	0	334,999,559
c. Employer Contributions - Special (POB, Termination, etc.)	0	0	1,067,164	1,357,164
d. Total Contributions	\$2,410,650	\$5,293,279	\$1,067,164	\$449,850,914
3 Total Payments Excluding Post-Retirement Death	2,105,987	1,476,293	5,376,641	506,357,361
4 Administrative Expenses ²	28,808	49,530	0	11,885,034
5 Subtotal 1 + 2d – 3 – 4	\$37,816,994	\$48,784,948	\$50,489,269	\$9,060,277,237
6 Weighted Average Fund Balance	37,679,067	46,901,220	52,444,207	9,094,265,987
7 Earnings Allocated in Proportion to 6	2,494,210	3,104,682	3,471,606	602,005,689
8 Allocated Valuation Value of Assets as of End of Year 5 + 7	\$40,311,204	\$51,889,630	\$53,960,875	\$9,662,282,926

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit VII: Recommended Employer Contribution Rates – For Use in Preparing Contribution Rate Packet

The recommended employer contribution rates found on pages 35 through 43 have been shown on an aggregate basis. Within this Exhibit we have included the recommended legacy tier employer contribution rates as of December 31, 2020 for employers who are in Social Security and for employers who are not in Social Security. For completeness, we have also included the PEPRA tier employer contribution rates.

Cost Group #1	Basic			COLA			Total			All Aggregate Pay
	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	
County Tier 1 w/ Courts	16.61%	24.91%	24.91%	3.47%	5.21%	5.21%	20.08%	30.12%	30.12%	29.80%
District Tier 1 w/o POB	19.84%	29.76%	29.76%	6.10%	9.15%	9.15%	25.94%	38.91%	38.91%	38.60%
District Tier 1 – Moraga	N/A	N/A	23.65%	N/A	N/A	5.65%	N/A	N/A	29.30%	29.30%
District Tier 1 – First Five	16.72%	25.07%	N/A	3.69%	5.54%	N/A	20.41%	30.61%	N/A	30.25%
District Tier 1 – LAFCO	17.86%	26.78%	N/A	5.35%	8.04%	N/A	23.21%	34.82%	N/A	34.52%
County Tier 4 (3% COLA) w/ Courts	N/A	N/A	20.49%	N/A	N/A	4.55%	N/A	N/A	25.04%	25.04%
District Tier 4 (3% COLA) w/o POB	N/A	N/A	25.37%	N/A	N/A	8.47%	N/A	N/A	33.84%	33.84%
District Tier 4 (3% COLA) – Moraga	N/A	N/A	19.49%	N/A	N/A	5.05%	N/A	N/A	24.54%	24.54%
District Tier 4 (3% COLA) – First Five	N/A	N/A	20.62%	N/A	N/A	4.87%	N/A	N/A	25.49%	25.49%
District Tier 4 (3% COLA) – LAFCO	N/A	N/A	22.39%	N/A	N/A	7.37%	N/A	N/A	29.76%	29.76%
County Tier 4 (2% COLA) w/ Courts	N/A	N/A	20.23%	N/A	N/A	3.52%	N/A	N/A	23.75%	23.75%
Cost Group #2										
County Tier 3 w/ Courts	15.75%	23.63%	N/A	3.29%	4.93%	N/A	19.04%	28.56%	N/A	28.17%
District Tier 3 w/o POB	19.04%	28.57%	28.57%	5.95%	8.91%	8.91%	24.99%	37.48%	37.48%	36.97%
County Tier 5 (3%/4% COLA) w/ Courts	N/A	N/A	19.80%	N/A	N/A	4.28%	N/A	N/A	24.08%	24.08%
District Tier 5 (3%/4% COLA) w/o POB	N/A	N/A	24.68%	N/A	N/A	8.20%	N/A	N/A	32.88%	32.88%
County Tier 5 (2% COLA) w/ Courts	N/A	N/A	19.63%	N/A	N/A	3.36%	N/A	N/A	22.99%	22.99%
District Tier 5 (2% COLA) w/o POB	N/A	N/A	24.51%	N/A	N/A	7.28%	N/A	N/A	31.79%	31.79%

¹ If employer is in Social Security.

² For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.

Section 4: Actuarial Valuation Basis

Exhibit VII: Recommended Employer Contribution Rates (continued)

Cost Group #3 ¹	Basic			COLA			Total			All Aggregate Pay
	First \$350 Monthly ²	Excess of \$350 Monthly ¹	All Eligible Pay ³	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	
CCCSD Tier 1	N/A	N/A	13.27%	N/A	N/A	3.77%	N/A	N/A	17.04%	17.04%
CCCSD Tier 4 (3% COLA)	N/A	N/A	8.57%	N/A	N/A	2.89%	N/A	N/A	11.46%	11.46%
Cost Group #4										
Contra Costa Housing Authority Tier 1	20.21%	30.32%	N/A	9.35%	14.02%	N/A	29.56%	44.34%	N/A	43.59%
Contra Costa Housing Authority Tier 4 (3% COLA)	N/A	N/A	25.35%	N/A	N/A	13.06%	N/A	N/A	38.41%	38.41%
Cost Group #5										
CCCYPD Tier 1	N/A	N/A	25.81%	N/A	N/A	12.66%	N/A	N/A	38.47%	38.47%
CCCYPD Tier 4 (3% COLA)	N/A	N/A	22.26%	N/A	N/A	12.47%	N/A	N/A	34.73%	34.73%
CCCYPD Tier 4 (2% COLA)	N/A	N/A	21.42%	N/A	N/A	11.05%	N/A	N/A	32.47%	32.47%
Cost Group #6										
Non-Enhanced District Tier 1	8.76%	13.14%	N/A	2.62%	3.93%	N/A	11.38%	17.07%	N/A	16.87%
Non-Enhanced District Tier 4 (3% COLA)	N/A	N/A	10.03%	N/A	N/A	3.32%	N/A	N/A	13.35%	13.35%
Cost Group #7										
County Tier A	N/A	N/A	44.00%	N/A	N/A	27.62%	N/A	N/A	71.62%	71.62%
County Tier D	N/A	N/A	35.71%	N/A	N/A	26.20%	N/A	N/A	61.91%	61.91%
Cost Group #8										
CCCYPD Tier A	N/A	N/A	32.61%	N/A	N/A	35.25%	N/A	N/A	67.86%	67.86%
CCCYPD Tier D	N/A	N/A	21.92%	N/A	N/A	32.89%	N/A	N/A	54.81%	54.81%
CCCYPD Safety Tier E	N/A	N/A	21.81%	N/A	N/A	31.19%	N/A	N/A	53.00%	53.00%

¹ These rates reflect the District's prepayment of \$70,763,669 to reduce the District's UAAL contribution rate on June 25, 2021.

² If employer is in Social Security.

³ For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.

Section 4: Actuarial Valuation Basis

Exhibit VII: Recommended Employer Contribution Rates (continued)

Cost Group #9	Basic			COLA			Total			All Aggregate Pay
	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	
County Tier C	N/A	N/A	42.30%	N/A	N/A	24.92%	N/A	N/A	67.22%	67.22%
County Tier E	N/A	N/A	34.85%	N/A	N/A	24.11%	N/A	N/A	58.96%	58.96%
Cost Group #10										
Moraga-Orinda FD Tier A	N/A	N/A	32.98%	N/A	N/A	37.37%	N/A	N/A	70.35%	70.35%
Moraga-Orinda FD Tier D	N/A	N/A	24.06%	N/A	N/A	35.57%	N/A	N/A	59.63%	59.63%
Cost Group #11										
San Ramon FD Tier A	N/A	N/A	52.56%	N/A	N/A	28.80%	N/A	N/A	81.36%	81.36%
San Ramon FD Tier D	N/A	N/A	40.06%	N/A	N/A	25.64%	N/A	N/A	65.70%	65.70%
Cost Group #12										
Rodeo-Hercules FPD Tier A	N/A	N/A	57.00%	N/A	N/A	36.06%	N/A	N/A	93.06%	93.06%
Rodeo-Hercules FPD Tier D	N/A	N/A	48.75%	N/A	N/A	33.62%	N/A	N/A	82.37%	82.37%
Cost Group #13										
East CCCFPD Tier A	N/A	N/A	47.75%	N/A	N/A	20.93%	N/A	N/A	68.68%	68.68%
East CCCFPD Tier D	N/A	N/A	37.20%	N/A	N/A	18.65%	N/A	N/A	55.85%	55.85%

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¹ If employer is in Social Security.

² For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.



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August 6, 2021

Ms. Gail Strohl
Chief Executive Officer
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520

**Re: Contra Costa County Employees' Retirement Association (CCCERA)
Contribution Rate Packet for the Period from July 1, 2022 through June 30, 2023**

Dear Gail:

As requested, we have prepared the enclosed contribution rate packet that contains the employer and member contribution rates for the period from July 1, 2022 through June 30, 2023.

The following documents are enclosed:

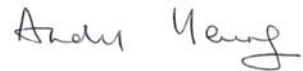
- Contribution Rate Packet Cover Page
- Contribution Rate Packet Table of Contents
- Contribution Rate Packet Cover Memo
- Board of Supervisors Resolution
- Employer Contribution Rates (Exhibits 1 through 13)
- Member Contribution Rates (Exhibits A through N)
- Examples for Subvention and Employee Cost Sharing
- Prepayment Discount Factor for 2022-2023

The actuarial calculations contained in this letter were performed under my supervision. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein.

Ms. Gail Strohl
August 6, 2021
Page 2

We will also send these documents to you electronically. Please let us know if you have any questions.

Sincerely,



Andy Yeung, ASA, MAAA, FCA, EA
Vice President & Actuary

EK/bbf
Enclosures (5697741)

cc: Christina Dunn



**CONTRA COSTA COUNTY
EMPLOYEES' RETIREMENT ASSOCIATION**

**CONTRIBUTION RATE PACKET FOR
JULY 1, 2022 through JUNE 30, 2023**

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

TABLE OF CONTENTS

<u>Page</u>	<u>Description</u>
i	Memo from CEO
1	Board of Supervisors Resolution
2	Employer Rates & Refundability Discount Factors for Cost Group #1 (Exhibit 1)
3	Employer Rates & Refundability Discount Factors for Cost Group #2 (Exhibit 2)
4	Employer Rates & Refundability Discount Factors for Cost Group #3 (Exhibit 3)
5	Employer Rates & Refundability Discount Factors for Cost Group #4 (Exhibit 4)
6	Employer Rates & Refundability Discount Factors for Cost Group #5 (Exhibit 5)
7	Employer Rates & Refundability Discount Factors for Cost Group #6 (Exhibit 6)
8	Employer Rates & Refundability Discount Factors for Cost Group #7 (Exhibit 7)
9	Employer Rates & Refundability Discount Factors for Cost Group #8 (Exhibit 8)
10	Employer Rates & Refundability Discount Factors for Cost Group #9 (Exhibit 9)
11	Employer Rates & Refundability Discount Factors for Cost Group #10 (Exhibit 10)
12	Employer Rates & Refundability Discount Factors for Cost Group #11 (Exhibit 11)
13	Employer Rates & Refundability Discount Factors for Cost Group #12 (Exhibit 12)
14	Employer Rates & Refundability Discount Factors for Cost Group #13 (Exhibit 13)
15	General Non-PEPRA Cost Group #1 Member Rates (Exhibit A)
16	General Non-PEPRA Cost Group #2 Member Rates (Exhibit B)
17	General Non-PEPRA Cost Group #3 Member Rates (Exhibit C)
18	General Non-PEPRA Cost Group #4 Member Rates (Exhibit D)
19	General Non-PEPRA Cost Group #5 Member Rates (Exhibit E)
20	General Non-PEPRA Cost Group #6 Member Rates (Exhibit F)
21	Safety Non-PEPRA Cost Group #7 Member Rates (Exhibit G)
22	Safety Non-PEPRA Cost Group #8 Member Rates (Exhibit H)
23	Safety Non-PEPRA Cost Group #9 Member Rates (Exhibit I)

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

- 24 Safety Non-PEPRA Cost Group #10 Member Rates (Exhibit J)
- 25 Safety Non-PEPRA Cost Group #11 Member Rates (Exhibit K)
- 26 Safety Non-PEPRA Cost Group #12 Member Rates (Exhibit L)
- 27 Safety Non-PEPRA Cost Group #13 Member Rates (Exhibit M)
- 28 General and Safety PEPRA Member Rates (Exhibit N)
- 29 Examples for Subvention and Employee Cost Sharing
- 30 Prepayment Discount Factor for 2022-23



MEMORANDUM

Date: August 11, 2021
To: Interested Parties and Participating Employers
From: Gail Strohl, Chief Executive Officer
Subject: Contribution Rates Effective July 1, 2022

At its August 11, 2021 meeting, the Retirement Board reviewed the actuary's valuation report for the year ending December 31, 2020 and adopted the recommended employer and employee contribution rates, which will become effective on July 1, 2022. A copy of the December 31, 2020 Actuarial Valuation can be found on CCCERA's website at www.cccera.org under the Actuarial Valuations link.

Enclosed are the employer and employee contribution rates to be used effective July 1, 2022 through June 30, 2023.

Please note the following:

- ✓ **The rates are effective July 1, 2022 through June 30, 2023 and have not yet been adopted by the County Board of Supervisors.**
- ✓ **The rates are BEFORE ANY EMPLOYER SUBVENTION of the employee contribution.**
The rates quoted here are the employer required rates without taking into consideration any employer subvention of employee contributions. A convenient methodology for adding subvention is included for your use on page 29. Note that subvention is not always permitted for PEPRA members.
- ✓ **The rates are BEFORE ANY INCREASE IN EMPLOYEE RATE to pay a portion of the employer contribution.**
If an employee's rate needs to be increased to pay a portion of the employer contribution, both employee and employer rates would need to be adjusted accordingly. A convenient methodology for adding subvention is included for your use on page 29.

THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA

Adopted this Order on _____, by the following vote:

- AYES:
- NOES:
- ABSENT:
- ABSTAIN:

SUBJECT: Approving Contribution Rates to be charged Resolution No. _____
by the Contra Costa County Employees' Retirement Association.

Pursuant to Government Code Section 31454 and on recommendation of the Board of the Contra Costa County Employees' Retirement Association, BE IT RESOLVED that the following contribution rates are approved to be effective for the period July 1, 2022 through June 30, 2023.

- I. Employer Contribution Rates for Basic and Cost-of-Living Components and Non-refundability Discount Factors
 - A. For General Members (Sec. 31676.11, Sec. 31676.16 and Sec. 7522.20(a)) See attached Exhibits 1 through 6
 - B. For Safety Members (Sec. 31664, Sec. 31664.1 and Sec. 7522.25(d)) See attached Exhibits 7 through 13
- II. Employee Contribution Rates for Basic and Cost-of-Living Components

See attached Exhibits A through N

The Pension Obligation Bonds (POB) issued by the County in March 1994 and April 2003, affected contribution rates for certain County employers. The following non-County employers who participate in the Retirement Association are referred to as "Districts".

- | | |
|---|--|
| Bethel Island Municipal Improvement District | In-Home Supportive Services Authority |
| Byron, Brentwood Knightsen Union Cemetery District | First 5 - Children & Families Commission |
| Central Contra Costa Sanitary District | Contra Costa County Fire Protection District |
| Contra Costa County Employees' Retirement Association | East Contra Costa Fire Protection District |
| Contra Costa Housing Authority | Moraga-Orinda Fire Protection District |
| Contra Costa Mosquito and Vector Control District | Rodeo-Hercules Fire Protection District |
| Local Agency Formation Commission (LAFCO) | San Ramon Valley Fire Protection District |
| Rodeo Sanitary District | |

All other departments/employers are referred to as "County" including the Superior Court of California, Contra Costa County.

Contra Costa County Fire Protection District and Moraga-Orinda Fire Protection District issued Pension Obligation Bonds in 2005 which affected contribution rates for these two employers. Subsequently, Contra Costa County Fire Protection District made additional payments to CCCERA for its UAAL in 2006 and 2007.

First 5 - Children & Families Commission made a UAAL prepayment in 2013 which affected contribution rates for that employer.

Central Contra Costa Sanitary District made a UAAL prepayment in 2013, 2014, 2015 and 2021 which affected contribution rates for that employer.

Local Agency Formation Commission made a UAAL prepayment in 2017, 2019 and 2020 which affected contribution rates for that employer.

San Ramon Valley Fire Protection District made a UAAL prepayment in 2017, 2018, 2019 and 2020 which affected contribution rates for the Safety members of that employer.

Exhibit 1

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #1

Cost Group #1	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
County General Tier 1 w/ Courts	24.91%	24.91%	5.21%	5.21%	0.9693
District General Tier 1 w/o POB	29.76%	29.76%	9.15%	9.15%	0.9693
District General Tier 1 – Moraga	N/A	23.65%	N/A	5.65%	0.9693
District General Tier 1 – First Five	25.07%	N/A	5.54%	N/A	0.9693
District General Tier 1 – LAFCO	26.78%	N/A	8.04%	N/A	0.9693
County General Tier 4 (3% COLA) w/ Courts		20.49%		4.55%	0.9625
District General Tier 4 (3% COLA) w/o POB		25.37%		8.47%	0.9625
District General Tier 4 (3% COLA) – Moraga		19.49%		5.05%	0.9625
District General Tier 4 (3% COLA) – First Five		20.62%		4.87%	0.9625
District General Tier 4 (3% COLA) – LAFCO		22.39%		7.37%	0.9625
County General Tier 4 (2% COLA) w/ Courts		20.23%		3.52%	0.9591

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- County General
- LAFCO
- CC Mosquito & Vector Control District
- Bethel Island Municipal Improvement District
- First 5 - Children and Families Commission
- Contra Costa County Employees' Retirement Association
- Superior Court
- East Contra Costa Fire Protection District
- Moraga-Orinda Fire Protection District
- Rodeo-Hercules Fire Protection District
- San Ramon Valley Fire Protection District

Tiers:

- Tier 1 Enhanced (2% @ 55)
- Tier 4 (2.5% @ 67)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 2

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #2

Cost Group #2	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
County General Tier 3 w/ Courts	23.63%	N/A	4.93%	N/A	0.9570
District General Tier 3 w/o POB	28.57%	28.57%	8.91%	8.91%	0.9570
County General Tier 5 (3%/4% COLA) w/ Courts		19.80%		4.28%	0.9615
District General Tier 5 (3%/4% COLA) w/o POB		24.68%		8.20%	0.9615
County General Tier 5 (2% COLA) w/ Courts		19.63%		3.36%	0.9581
District General Tier 5 (2% COLA) w/o POB		24.51%		7.28%	0.9581

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- County General
- In-Home Supportive Services Authority
- CC Mosquito & Vector Control District
- Superior Court

Tiers:

- Tier 3 Enhanced (2% @ 55)
- Tier 5 (2.5% @ 67)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 3

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #3

Cost Group #3	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
Central Contra Costa Sanitary District General Tier 1	N/A	13.27%	N/A	3.77%	0.9624
Central Contra Costa Sanitary District General Tier 4 (3% COLA)		8.57%		2.89%	0.9678

Basic rates shown include an administrative expense load of 0.65% of payroll.

The above rates reflect a prepayment in the amount of \$70,763,669 that Central Contra Costa Sanitary District made towards their Unfunded Actuarial Accrued Liability (UAAL) on June 25, 2021. This prepayment has been used to reduce Central Contra Costa Sanitary District's UAAL contribution rate.

Employers:

- Central Contra Costa Sanitary District

Tiers:

- Tier 1 Enhanced (2% @ 55)
- Tier 4 (2.5% @ 67)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 4

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #4

Cost Group #4	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
Contra Costa Housing Authority General Tier 1	30.32%	N/A	14.02%	N/A	0.9622
Contra Costa Housing Authority General Tier 4 (3% COLA)	25.35%		13.06%		0.9649

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- Contra Costa Housing Authority

Tiers:

- Tier 1 Enhanced (2% @ 55)
- Tier 4 (2.5% @ 67)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 5

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #5

Cost Group #5	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
Contra Costa County Fire Protection District General Tier 1	N/A	25.81%	N/A	12.66%	0.9787
Contra Costa County Fire Protection District General Tier 4 (3% COLA)		22.26%		12.47%	0.9548
Contra Costa County Fire Protection District General Tier 4 (2% COLA)		21.42%		11.05%	0.9602

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- Contra Costa County Fire Protection District

Tiers:

- Tier 1 Enhanced (2% @ 55)
- Tier 4 (2.5% @ 67)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPR tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 6

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #6

Cost Group #6	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
Non-Enhanced District General Tier 1	13.14%	N/A	3.93%	N/A	0.9508
Non-Enhanced District General Tier 4 (3% COLA)		10.03%		3.32%	0.9548

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- Rodeo Sanitary District
- Byron Brentwood Cemetery District

Tiers:

- Tier 1 Non-Enhanced (1.67% @ 55)
- Tier 4 (2.5% @ 67)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 7

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #7

Cost Group #7	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
County Safety Tier A	N/A	44.00%	N/A	27.62%	0.9630
County Safety Tier D		35.71%		26.20%	0.9719

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- County Safety

Tiers:

- Tier A Enhanced (3% @ 50)
- Tier D (2.7% @ 57)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 8

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #8

Cost Group #8	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
Contra Costa County Fire Protection District Safety Tier A	N/A	32.61%	N/A	35.25%	0.9694
Contra Costa County Fire Protection District Safety Tier D		21.92%		32.89%	0.9754
Contra Costa County Fire Protection District Safety Tier E		21.81%		31.19%	0.9719

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- Contra Costa County Fire Protection District

Tiers:

- Tier A Enhanced (3% @ 50)
- Tier D (2.7% @ 57)
- Tier E (2.7% @ 57)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPR tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 9

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #9

Cost Group #9	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
County Safety Tier C	N/A	42.30%	N/A	24.92%	0.9626
County Safety Tier E		34.85%		24.11%	0.9696

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- County Safety (Members hired on or after January 1, 2007)

Tiers:

- Tier C Enhanced (3% @ 50)
- Tier E (2.7% @ 57)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 10

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #10

Cost Group #10	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
Moraga-Orinda Fire Protection District Safety Tier A	N/A	32.98%	N/A	37.37%	0.9651
Moraga-Orinda Fire Protection District Safety Tier D		24.06%		35.57%	0.9723

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- Moraga-Orinda Fire Protection District

Tiers:

- Tier A Enhanced (3% @ 50)
- Tier D (2.7% @ 57)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 11

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #11

Cost Group #11	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
San Ramon Valley Fire Protection District Safety Tier A	N/A	52.56%	N/A	28.80%	0.9697
San Ramon Valley Fire Protection District Safety Tier D		40.06%		25.64%	0.9748

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- San Ramon Valley Fire Protection District

Tiers:

- Tier A Enhanced (3% @ 50)
- Tier D (2.7% @ 57)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 12

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #12

Cost Group #12 ¹	Basic		COLA		Non-Refundability Factor
	In Social Security ²	Not In Social Security ³	In Social Security ¹	Not In Social Security ²	
Rodeo-Hercules Fire Protection District Safety Tier A	N/A	57.00%	N/A	36.06%	0.9817
Rodeo-Hercules Fire Protection District Safety Tier D		48.75%		33.62%	0.9769

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- Rodeo-Hercules Fire Protection District

Tiers:

- Tier A Non-Enhanced (2% @ 50)
- Tier D (2.7% @ 57)

¹ Effective with the December 31, 2020 valuation, Rodeo-Hercules FPD's UAAL contribution for Fiscal Year 2022-2023 will be based on the UAAL rate applied to their payroll instead of a fixed dollar monthly contribution amount in prior fiscal years. Therefore, we have displayed the total normal cost and UAAL contribution rates in this table.

² If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

³ For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit 13

Contra Costa County Employees' Retirement Association

Employer Contribution Rates Effective for July 1, 2022 through June 30, 2023 for Cost Group #13

Cost Group #13	Basic		COLA		Non-Refundability Factor
	In Social Security ¹	Not In Social Security ²	In Social Security ¹	Not In Social Security ²	
East Contra Costa Fire Protection District Safety Tier A	N/A	47.75%	N/A	20.93%	0.9598
East Contra Costa Fire Protection District Safety Tier D		37.20%		18.65%	0.9783

Basic rates shown include an administrative expense load of 0.65% of payroll.

Employers:

- East Contra Costa Fire Protection District

Tiers:

- Tier A Enhanced (3% @ 50)
- Tier D (2.7% @ 57)

¹ If employer is in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67. The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² For legacy tier, applies to employer who is not in Social Security and the rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit. For PEPRA tier, applies to all employers and the rate should be applied to all compensation up to the applicable annual Gov. Code 7522.10(d) compensation limit.

Exhibit A

General Cost Group #1 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic ²			Total	
	In Social Security	Not In Social Security	COLA	In Social Security	Not In Social Security
15	5.33%	5.32%	2.72%	8.05%	8.04%
16	5.42%	5.41%	2.77%	8.19%	8.18%
17	5.52%	5.51%	2.82%	8.34%	8.33%
18	5.62%	5.61%	2.88%	8.50%	8.49%
19	5.72%	5.71%	2.94%	8.66%	8.65%
20	5.82%	5.81%	2.99%	8.81%	8.80%
21	5.92%	5.91%	3.05%	8.97%	8.96%
22	6.02%	6.01%	3.10%	9.12%	9.11%
23	6.13%	6.12%	3.17%	9.30%	9.29%
24	6.24%	6.23%	3.23%	9.47%	9.46%
25	6.35%	6.34%	3.29%	9.64%	9.63%
26	6.46%	6.45%	3.35%	9.81%	9.80%
27	6.58%	6.57%	3.42%	10.00%	9.99%
28	6.69%	6.68%	3.48%	10.17%	10.16%
29	6.81%	6.80%	3.55%	10.36%	10.35%
30	6.93%	6.92%	3.62%	10.55%	10.54%
31	7.06%	7.05%	3.69%	10.75%	10.74%
32	7.18%	7.17%	3.76%	10.94%	10.93%
33	7.31%	7.30%	3.83%	11.14%	11.13%
34	7.45%	7.44%	3.91%	11.36%	11.35%
35	7.58%	7.57%	3.98%	11.56%	11.55%
36	7.72%	7.71%	4.06%	11.78%	11.77%
37	7.86%	7.85%	4.14%	12.00%	11.99%
38	8.00%	7.99%	4.22%	12.22%	12.21%
39	8.15%	8.14%	4.30%	12.45%	12.44%
40	8.30%	8.29%	4.39%	12.69%	12.68%
41	8.46%	8.45%	4.48%	12.94%	12.93%
42	8.61%	8.60%	4.56%	13.17%	13.16%
43	8.76%	8.75%	4.64%	13.40%	13.39%
44	8.91%	8.90%	4.73%	13.64%	13.63%
45	9.07%	9.06%	4.82%	13.89%	13.88%
46	9.23%	9.22%	4.91%	14.14%	14.13%
47	9.39%	9.38%	5.00%	14.39%	14.38%
48	9.54%	9.53%	5.08%	14.62%	14.61%
49	9.69%	9.68%	5.17%	14.86%	14.85%
50	9.85%	9.84%	5.26%	15.11%	15.10%
51	10.01%	10.00%	5.35%	15.36%	15.35%
52	10.17%	10.16%	5.44%	15.61%	15.60%
53	10.33%	10.32%	5.53%	15.86%	15.85%
54	10.49%	10.48%	5.62%	16.11%	16.10%
55	10.64%	10.63%	5.70%	16.34%	16.33%
56	10.71%	10.70%	5.74%	16.45%	16.44%
57	10.68%	10.67%	5.72%	16.40%	16.39%
58	10.65%	10.64%	5.71%	16.36%	16.35%
59	10.34%	10.33%	5.53%	15.87%	15.86%
60 & Over	10.34%	10.33%	5.53%	15.87%	15.86%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 56.23% applied to Basic Rates prior to adjustment for administrative expenses

¹ For members in Social Security, the "In Social Security" rate should only be applied to monthly compensation in excess of \$116.67. All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² The Basic Rate for members in Social Security is increased by 0.01% to account for the administrative expense rate of 0.49% that is applicable to the first \$116.67 of compensation.

Exhibit B

General Cost Group #2 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic ²			Total	
	In Social Security	Not In Social Security	COLA	In Social Security	Not In Social Security
15	5.32%	5.31%	2.36%	7.68%	7.67%
16	5.41%	5.40%	2.40%	7.81%	7.80%
17	5.51%	5.50%	2.45%	7.96%	7.95%
18	5.60%	5.59%	2.50%	8.10%	8.09%
19	5.70%	5.69%	2.55%	8.25%	8.24%
20	5.80%	5.79%	2.59%	8.39%	8.38%
21	5.91%	5.90%	2.65%	8.56%	8.55%
22	6.01%	6.00%	2.70%	8.71%	8.70%
23	6.12%	6.11%	2.75%	8.87%	8.86%
24	6.23%	6.22%	2.81%	9.04%	9.03%
25	6.34%	6.33%	2.86%	9.20%	9.19%
26	6.45%	6.44%	2.91%	9.36%	9.35%
27	6.56%	6.55%	2.97%	9.53%	9.52%
28	6.68%	6.67%	3.03%	9.71%	9.70%
29	6.80%	6.79%	3.08%	9.88%	9.87%
30	6.92%	6.91%	3.14%	10.06%	10.05%
31	7.04%	7.03%	3.20%	10.24%	10.23%
32	7.17%	7.16%	3.27%	10.44%	10.43%
33	7.30%	7.29%	3.33%	10.63%	10.62%
34	7.43%	7.42%	3.39%	10.82%	10.81%
35	7.56%	7.55%	3.46%	11.02%	11.01%
36	7.70%	7.69%	3.53%	11.23%	11.22%
37	7.84%	7.83%	3.59%	11.43%	11.42%
38	7.99%	7.98%	3.67%	11.66%	11.65%
39	8.14%	8.13%	3.74%	11.88%	11.87%
40	8.28%	8.27%	3.81%	12.09%	12.08%
41	8.43%	8.42%	3.88%	12.31%	12.30%
42	8.59%	8.58%	3.96%	12.55%	12.54%
43	8.74%	8.73%	4.03%	12.77%	12.76%
44	8.89%	8.88%	4.11%	13.00%	12.99%
45	9.05%	9.04%	4.19%	13.24%	13.23%
46	9.21%	9.20%	4.26%	13.47%	13.46%
47	9.37%	9.36%	4.34%	13.71%	13.70%
48	9.51%	9.50%	4.41%	13.92%	13.91%
49	9.68%	9.67%	4.49%	14.17%	14.16%
50	9.83%	9.82%	4.57%	14.40%	14.39%
51	9.99%	9.98%	4.65%	14.64%	14.63%
52	10.15%	10.14%	4.72%	14.87%	14.86%
53	10.34%	10.33%	4.82%	15.16%	15.15%
54	10.46%	10.45%	4.88%	15.34%	15.33%
55	10.60%	10.59%	4.94%	15.54%	15.53%
56	10.71%	10.70%	5.00%	15.71%	15.70%
57	10.69%	10.68%	4.99%	15.68%	15.67%
58	10.67%	10.66%	4.98%	15.65%	15.64%
59	10.06%	10.05%	4.68%	14.74%	14.73%
60 & Over	10.06%	10.05%	4.68%	14.74%	14.73%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 48.96% applied to Basic Rates prior to adjustment for administrative expenses

¹ For members in Social Security, the "In Social Security" rate should only be applied to monthly compensation in excess of \$116.67. All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² The Basic Rate for members in Social Security is increased by 0.01% to account for the administrative expense rate of 0.49% that is applicable to the first \$116.67 of compensation.

Exhibit C

General Cost Group #3 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	5.50%	2.73%	8.23%
16	5.59%	2.78%	8.37%
17	5.69%	2.83%	8.52%
18	5.79%	2.89%	8.68%
19	5.90%	2.95%	8.85%
20	6.00%	3.00%	9.00%
21	6.11%	3.06%	9.17%
22	6.22%	3.12%	9.34%
23	6.33%	3.18%	9.51%
24	6.44%	3.24%	9.68%
25	6.55%	3.30%	9.85%
26	6.67%	3.37%	10.04%
27	6.79%	3.43%	10.22%
28	6.91%	3.50%	10.41%
29	7.03%	3.56%	10.59%
30	7.16%	3.63%	10.79%
31	7.29%	3.71%	11.00%
32	7.42%	3.78%	11.20%
33	7.55%	3.85%	11.40%
34	7.68%	3.92%	11.60%
35	7.82%	3.99%	11.81%
36	7.97%	4.08%	12.05%
37	8.11%	4.15%	12.26%
38	8.26%	4.23%	12.49%
39	8.42%	4.32%	12.74%
40	8.57%	4.40%	12.97%
41	8.73%	4.49%	13.22%
42	8.88%	4.57%	13.45%
43	9.04%	4.66%	13.70%
44	9.20%	4.75%	13.95%
45	9.37%	4.84%	14.21%
46	9.52%	4.92%	14.44%
47	9.68%	5.01%	14.69%
48	9.84%	5.09%	14.93%
49	10.00%	5.18%	15.18%
50	10.16%	5.27%	15.43%
51	10.32%	5.36%	15.68%
52	10.49%	5.45%	15.94%
53	10.65%	5.54%	16.19%
54	10.79%	5.61%	16.40%
55	10.89%	5.67%	16.56%
56	11.00%	5.73%	16.73%
57	10.96%	5.71%	16.67%
58	10.72%	5.57%	16.29%
59	10.28%	5.33%	15.61%
60 & Over	10.28%	5.33%	15.61%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 54.49% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit D

General Cost Group #4 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic ²			Total	
	In Social Security	Not In Social Security	COLA	In Social Security	Not In Social Security
15	5.30%	5.29%	2.63%	7.93%	7.92%
16	5.40%	5.39%	2.69%	8.09%	8.08%
17	5.49%	5.48%	2.74%	8.23%	8.22%
18	5.59%	5.58%	2.79%	8.38%	8.37%
19	5.69%	5.68%	2.85%	8.54%	8.53%
20	5.79%	5.78%	2.90%	8.69%	8.68%
21	5.89%	5.88%	2.96%	8.85%	8.84%
22	6.00%	5.99%	3.02%	9.02%	9.01%
23	6.10%	6.09%	3.07%	9.17%	9.16%
24	6.21%	6.20%	3.13%	9.34%	9.33%
25	6.32%	6.31%	3.19%	9.51%	9.50%
26	6.43%	6.42%	3.25%	9.68%	9.67%
27	6.55%	6.54%	3.32%	9.87%	9.86%
28	6.66%	6.65%	3.38%	10.04%	10.03%
29	6.78%	6.77%	3.45%	10.23%	10.22%
30	6.90%	6.89%	3.51%	10.41%	10.40%
31	7.03%	7.02%	3.58%	10.61%	10.60%
32	7.15%	7.14%	3.65%	10.80%	10.79%
33	7.28%	7.27%	3.72%	11.00%	10.99%
34	7.41%	7.40%	3.79%	11.20%	11.19%
35	7.55%	7.54%	3.87%	11.42%	11.41%
36	7.68%	7.67%	3.94%	11.62%	11.61%
37	7.82%	7.81%	4.02%	11.84%	11.83%
38	7.97%	7.96%	4.10%	12.07%	12.06%
39	8.12%	8.11%	4.18%	12.30%	12.29%
40	8.27%	8.26%	4.26%	12.53%	12.52%
41	8.42%	8.41%	4.35%	12.77%	12.76%
42	8.57%	8.56%	4.43%	13.00%	12.99%
43	8.72%	8.71%	4.51%	13.23%	13.22%
44	8.87%	8.86%	4.59%	13.46%	13.45%
45	9.04%	9.03%	4.69%	13.73%	13.72%
46	9.19%	9.18%	4.77%	13.96%	13.95%
47	9.34%	9.33%	4.85%	14.19%	14.18%
48	9.49%	9.48%	4.93%	14.42%	14.41%
49	9.66%	9.65%	5.03%	14.69%	14.68%
50	9.80%	9.79%	5.10%	14.90%	14.89%
51	9.97%	9.96%	5.20%	15.17%	15.16%
52	10.13%	10.12%	5.29%	15.42%	15.41%
53	10.31%	10.30%	5.38%	15.69%	15.68%
54	10.46%	10.45%	5.47%	15.93%	15.92%
55	10.60%	10.59%	5.54%	16.14%	16.13%
56	10.66%	10.65%	5.58%	16.24%	16.23%
57	10.70%	10.69%	5.60%	16.30%	16.29%
58	10.54%	10.53%	5.51%	16.05%	16.04%
59	10.08%	10.07%	5.26%	15.34%	15.33%
60 & Over	10.08%	10.07%	5.26%	15.34%	15.33%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 54.89% applied to Basic Rates prior to adjustment for administrative expenses

¹ For members in Social Security, the "In Social Security" rate should only be applied to monthly compensation in excess of \$116.67. All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² The Basic Rate for members in Social Security is increased by 0.01% to account for the administrative expense rate of 0.49% that is applicable to the first \$116.67 of compensation.

Exhibit E

General Cost Group #5 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	5.33%	2.84%	8.17%
16	5.42%	2.89%	8.31%
17	5.52%	2.95%	8.47%
18	5.62%	3.01%	8.63%
19	5.72%	3.07%	8.79%
20	5.82%	3.13%	8.95%
21	5.92%	3.19%	9.11%
22	6.03%	3.25%	9.28%
23	6.13%	3.31%	9.44%
24	6.24%	3.38%	9.62%
25	6.35%	3.44%	9.79%
26	6.47%	3.51%	9.98%
27	6.58%	3.58%	10.16%
28	6.70%	3.65%	10.35%
29	6.82%	3.72%	10.54%
30	6.94%	3.79%	10.73%
31	7.06%	3.86%	10.92%
32	7.19%	3.93%	11.12%
33	7.32%	4.01%	11.33%
34	7.45%	4.09%	11.54%
35	7.59%	4.17%	11.76%
36	7.72%	4.25%	11.97%
37	7.87%	4.33%	12.20%
38	8.01%	4.42%	12.43%
39	8.16%	4.50%	12.66%
40	8.31%	4.59%	12.90%
41	8.47%	4.69%	13.16%
42	8.62%	4.77%	13.39%
43	8.77%	4.86%	13.63%
44	8.92%	4.95%	13.87%
45	9.08%	5.04%	14.12%
46	9.24%	5.14%	14.38%
47	9.40%	5.23%	14.63%
48	9.55%	5.32%	14.87%
49	9.71%	5.41%	15.12%
50	9.87%	5.51%	15.38%
51	10.03%	5.60%	15.63%
52	10.18%	5.69%	15.87%
53	10.35%	5.79%	16.14%
54	10.51%	5.88%	16.39%
55	10.62%	5.95%	16.57%
56	10.69%	5.99%	16.68%
57	10.75%	6.02%	16.77%
58	10.63%	5.95%	16.58%
59	10.31%	5.77%	16.08%
60 & Over	10.31%	5.77%	16.08%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 58.72% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit F

General Cost Group #6 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic ²			Total	
	In Social Security	Not In Social Security	COLA	In Social Security	Not In Social Security
15	6.06%	6.05%	2.44%	8.50%	8.49%
16	6.17%	6.16%	2.49%	8.66%	8.65%
17	6.27%	6.26%	2.53%	8.80%	8.79%
18	6.39%	6.38%	2.59%	8.98%	8.97%
19	6.50%	6.49%	2.63%	9.13%	9.12%
20	6.62%	6.61%	2.69%	9.31%	9.30%
21	6.73%	6.72%	2.73%	9.46%	9.45%
22	6.85%	6.84%	2.79%	9.64%	9.63%
23	6.97%	6.96%	2.84%	9.81%	9.80%
24	7.10%	7.09%	2.90%	10.00%	9.99%
25	7.23%	7.22%	2.95%	10.18%	10.17%
26	7.36%	7.35%	3.01%	10.37%	10.36%
27	7.49%	7.48%	3.07%	10.56%	10.55%
28	7.62%	7.61%	3.13%	10.75%	10.74%
29	7.76%	7.75%	3.19%	10.95%	10.94%
30	7.90%	7.89%	3.25%	11.15%	11.14%
31	8.04%	8.03%	3.31%	11.35%	11.34%
32	8.20%	8.19%	3.38%	11.58%	11.57%
33	8.34%	8.33%	3.44%	11.78%	11.77%
34	8.50%	8.49%	3.51%	12.01%	12.00%
35	8.66%	8.65%	3.58%	12.24%	12.23%
36	8.82%	8.81%	3.65%	12.47%	12.46%
37	8.98%	8.97%	3.72%	12.70%	12.69%
38	9.14%	9.13%	3.79%	12.93%	12.92%
39	9.30%	9.29%	3.86%	13.16%	13.15%
40	9.47%	9.46%	3.94%	13.41%	13.40%
41	9.63%	9.62%	4.01%	13.64%	13.63%
42	9.79%	9.78%	4.08%	13.87%	13.86%
43	9.96%	9.95%	4.15%	14.11%	14.10%
44	10.12%	10.11%	4.22%	14.34%	14.33%
45	10.28%	10.27%	4.29%	14.57%	14.56%
46	10.46%	10.45%	4.37%	14.83%	14.82%
47	10.62%	10.61%	4.44%	15.06%	15.05%
48	10.81%	10.80%	4.53%	15.34%	15.33%
49	10.96%	10.95%	4.59%	15.55%	15.54%
50	11.10%	11.09%	4.65%	15.75%	15.74%
51	11.21%	11.20%	4.70%	15.91%	15.90%
52	11.16%	11.15%	4.68%	15.84%	15.83%
53	11.08%	11.07%	4.64%	15.72%	15.71%
54	10.62%	10.61%	4.44%	15.06%	15.05%
55	10.62%	10.61%	4.44%	15.06%	15.05%
56	10.62%	10.61%	4.44%	15.06%	15.05%
57	10.62%	10.61%	4.44%	15.06%	15.05%
58	10.62%	10.61%	4.44%	15.06%	15.05%
59	10.62%	10.61%	4.44%	15.06%	15.05%
60 & Over	10.62%	10.61%	4.44%	15.06%	15.05%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 43.90% applied to Basic Rates prior to adjustment for administrative expenses

¹ For members in Social Security, the "In Social Security" rate should only be applied to monthly compensation in excess of \$116.67. All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

² The Basic Rate for members in Social Security is increased by 0.01% to account for the administrative expense rate of 0.49% that is applicable to the first \$116.67 of compensation.

Exhibit G

Safety Cost Group #7 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.48%	6.29%	15.77%
16	9.48%	6.29%	15.77%
17	9.48%	6.29%	15.77%
18	9.48%	6.29%	15.77%
19	9.48%	6.29%	15.77%
20	9.48%	6.29%	15.77%
21	9.48%	6.29%	15.77%
22	9.62%	6.39%	16.01%
23	9.76%	6.49%	16.25%
24	9.91%	6.59%	16.50%
25	10.06%	6.70%	16.76%
26	10.21%	6.80%	17.01%
27	10.37%	6.91%	17.28%
28	10.52%	7.02%	17.54%
29	10.68%	7.13%	17.81%
30	10.85%	7.25%	18.10%
31	11.02%	7.37%	18.39%
32	11.19%	7.49%	18.68%
33	11.37%	7.61%	18.98%
34	11.55%	7.74%	19.29%
35	11.74%	7.87%	19.61%
36	11.93%	8.01%	19.94%
37	12.12%	8.14%	20.26%
38	12.31%	8.27%	20.58%
39	12.52%	8.42%	20.94%
40	12.74%	8.57%	21.31%
41	12.95%	8.72%	21.67%
42	13.18%	8.88%	22.06%
43	13.41%	9.04%	22.45%
44	13.67%	9.22%	22.89%
45	13.89%	9.38%	23.27%
46	13.91%	9.39%	23.30%
47	13.94%	9.41%	23.35%
48	13.75%	9.28%	23.03%
49 & Over	13.23%	8.92%	22.15%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 69.98% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit H

Safety Cost Group #8 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.46%	6.42%	15.88%
16	9.46%	6.42%	15.88%
17	9.46%	6.42%	15.88%
18	9.46%	6.42%	15.88%
19	9.46%	6.42%	15.88%
20	9.46%	6.42%	15.88%
21	9.46%	6.42%	15.88%
22	9.60%	6.52%	16.12%
23	9.74%	6.62%	16.36%
24	9.89%	6.72%	16.61%
25	10.04%	6.83%	16.87%
26	10.19%	6.94%	17.13%
27	10.34%	7.05%	17.39%
28	10.50%	7.16%	17.66%
29	10.66%	7.27%	17.93%
30	10.82%	7.39%	18.21%
31	10.99%	7.51%	18.50%
32	11.17%	7.64%	18.81%
33	11.34%	7.76%	19.10%
34	11.53%	7.90%	19.43%
35	11.72%	8.03%	19.75%
36	11.90%	8.16%	20.06%
37	12.10%	8.30%	20.40%
38	12.29%	8.44%	20.73%
39	12.49%	8.58%	21.07%
40	12.71%	8.74%	21.45%
41	12.93%	8.90%	21.83%
42	13.16%	9.06%	22.22%
43	13.39%	9.23%	22.62%
44	13.64%	9.41%	23.05%
45	13.85%	9.56%	23.41%
46	13.92%	9.61%	23.53%
47	13.86%	9.56%	23.42%
48	13.77%	9.50%	23.27%
49 & Over	13.26%	9.13%	22.39%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 71.53% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit I

Safety Cost Group #9 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.06%	3.89%	12.95%
16	9.06%	3.89%	12.95%
17	9.06%	3.89%	12.95%
18	9.06%	3.89%	12.95%
19	9.06%	3.89%	12.95%
20	9.06%	3.89%	12.95%
21	9.06%	3.89%	12.95%
22	9.19%	3.95%	13.14%
23	9.33%	4.01%	13.34%
24	9.47%	4.07%	13.54%
25	9.61%	4.14%	13.75%
26	9.75%	4.20%	13.95%
27	9.90%	4.27%	14.17%
28	10.05%	4.34%	14.39%
29	10.20%	4.40%	14.60%
30	10.36%	4.48%	14.84%
31	10.52%	4.55%	15.07%
32	10.69%	4.63%	15.32%
33	10.86%	4.70%	15.56%
34	11.03%	4.78%	15.81%
35	11.20%	4.86%	16.06%
36	11.38%	4.94%	16.32%
37	11.56%	5.02%	16.58%
38	11.73%	5.10%	16.83%
39	11.93%	5.19%	17.12%
40	12.12%	5.28%	17.40%
41	12.31%	5.36%	17.67%
42	12.51%	5.45%	17.96%
43	12.68%	5.53%	18.21%
44	12.78%	5.57%	18.35%
45	12.79%	5.58%	18.37%
46	12.67%	5.52%	18.19%
47	12.41%	5.41%	17.82%
48	12.74%	5.56%	18.30%
49 & Over	13.32%	5.82%	19.14%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 45.36% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit J

Safety Cost Group #10 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.46%	6.33%	15.79%
16	9.46%	6.33%	15.79%
17	9.46%	6.33%	15.79%
18	9.46%	6.33%	15.79%
19	9.46%	6.33%	15.79%
20	9.46%	6.33%	15.79%
21	9.46%	6.33%	15.79%
22	9.60%	6.43%	16.03%
23	9.74%	6.53%	16.27%
24	9.89%	6.63%	16.52%
25	10.04%	6.74%	16.78%
26	10.19%	6.85%	17.04%
27	10.34%	6.95%	17.29%
28	10.50%	7.07%	17.57%
29	10.66%	7.18%	17.84%
30	10.82%	7.29%	18.11%
31	10.99%	7.41%	18.40%
32	11.17%	7.54%	18.71%
33	11.34%	7.66%	19.00%
34	11.53%	7.79%	19.32%
35	11.72%	7.93%	19.65%
36	11.90%	8.05%	19.95%
37	12.10%	8.19%	20.29%
38	12.29%	8.33%	20.62%
39	12.49%	8.47%	20.96%
40	12.71%	8.62%	21.33%
41	12.93%	8.78%	21.71%
42	13.16%	8.94%	22.10%
43	13.39%	9.10%	22.49%
44	13.64%	9.28%	22.92%
45	13.85%	9.43%	23.28%
46	13.92%	9.48%	23.40%
47	13.86%	9.44%	23.30%
48	13.77%	9.37%	23.14%
49 & Over	13.26%	9.01%	22.27%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 70.58% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit K

Safety Cost Group #11 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.63%	6.69%	16.32%
16	9.63%	6.69%	16.32%
17	9.63%	6.69%	16.32%
18	9.63%	6.69%	16.32%
19	9.63%	6.69%	16.32%
20	9.63%	6.69%	16.32%
21	9.63%	6.69%	16.32%
22	9.78%	6.80%	16.58%
23	9.92%	6.90%	16.82%
24	10.07%	7.01%	17.08%
25	10.22%	7.12%	17.34%
26	10.38%	7.24%	17.62%
27	10.53%	7.35%	17.88%
28	10.69%	7.47%	18.16%
29	10.85%	7.59%	18.44%
30	11.02%	7.71%	18.73%
31	11.19%	7.83%	19.02%
32	11.37%	7.97%	19.34%
33	11.55%	8.10%	19.65%
34	11.74%	8.24%	19.98%
35	11.92%	8.37%	20.29%
36	12.11%	8.51%	20.62%
37	12.31%	8.65%	20.96%
38	12.51%	8.80%	21.31%
39	12.71%	8.95%	21.66%
40	12.92%	9.10%	22.02%
41	13.14%	9.26%	22.40%
42	13.37%	9.43%	22.80%
43	13.61%	9.61%	23.22%
44	13.84%	9.77%	23.61%
45	14.07%	9.94%	24.01%
46	14.10%	9.97%	24.07%
47	14.04%	9.92%	23.96%
48	13.78%	9.73%	23.51%
49 & Over	13.01%	9.17%	22.18%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 73.22% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit L

Safety Cost Group #12 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.59%	4.94%	14.53%
16	9.59%	4.94%	14.53%
17	9.59%	4.94%	14.53%
18	9.59%	4.94%	14.53%
19	9.59%	4.94%	14.53%
20	9.59%	4.94%	14.53%
21	9.59%	4.94%	14.53%
22	9.73%	5.01%	14.74%
23	9.88%	5.10%	14.98%
24	10.02%	5.17%	15.19%
25	10.18%	5.26%	15.44%
26	10.33%	5.34%	15.67%
27	10.48%	5.42%	15.90%
28	10.64%	5.51%	16.15%
29	10.80%	5.59%	16.39%
30	10.97%	5.69%	16.66%
31	11.14%	5.78%	16.92%
32	11.32%	5.88%	17.20%
33	11.49%	5.97%	17.46%
34	11.68%	6.07%	17.75%
35	11.88%	6.18%	18.06%
36	12.06%	6.28%	18.34%
37	12.25%	6.38%	18.63%
38	12.45%	6.49%	18.94%
39	12.66%	6.60%	19.26%
40	12.88%	6.72%	19.60%
41	13.09%	6.84%	19.93%
42	13.33%	6.97%	20.30%
43	13.56%	7.09%	20.65%
44	13.78%	7.21%	20.99%
45	13.99%	7.33%	21.32%
46	14.05%	7.36%	21.41%
47	13.97%	7.31%	21.28%
48	13.81%	7.23%	21.04%
49 & Over	13.07%	6.83%	19.90%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 54.26% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit M

Safety Cost Group #13 Non-PEPRA Member Contribution Rates

Effective for July 1, 2022 through June 30, 2023

Expressed as a Percentage of Monthly Payroll¹

Entry Age	Basic	COLA	Total
15	9.46%	6.30%	15.76%
16	9.46%	6.30%	15.76%
17	9.46%	6.30%	15.76%
18	9.46%	6.30%	15.76%
19	9.46%	6.30%	15.76%
20	9.46%	6.30%	15.76%
21	9.46%	6.30%	15.76%
22	9.60%	6.40%	16.00%
23	9.74%	6.50%	16.24%
24	9.89%	6.60%	16.49%
25	10.04%	6.71%	16.75%
26	10.19%	6.81%	17.00%
27	10.34%	6.92%	17.26%
28	10.50%	7.03%	17.53%
29	10.66%	7.14%	17.80%
30	10.82%	7.26%	18.08%
31	10.99%	7.38%	18.37%
32	11.17%	7.50%	18.67%
33	11.34%	7.62%	18.96%
34	11.53%	7.75%	19.28%
35	11.72%	7.89%	19.61%
36	11.90%	8.01%	19.91%
37	12.10%	8.15%	20.25%
38	12.29%	8.29%	20.58%
39	12.49%	8.43%	20.92%
40	12.71%	8.58%	21.29%
41	12.93%	8.74%	21.67%
42	13.16%	8.90%	22.06%
43	13.39%	9.06%	22.45%
44	13.64%	9.24%	22.88%
45	13.85%	9.38%	23.23%
46	13.92%	9.43%	23.35%
47	13.86%	9.39%	23.25%
48	13.77%	9.33%	23.10%
49 & Over	13.26%	8.97%	22.23%

Administrative Expense: 0.49% of payroll added to Basic Rates

COLA Loading: 70.24% applied to Basic Rates prior to adjustment for administrative expenses

¹ All rates should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit N

PEPRA Tier Member Contribution Rates **Effective for July 1, 2022 through June 30, 2023**

Expressed as a Percentage of Monthly Payroll¹

General Tiers	Basic	COLA	Total
Cost Group #1 – PEPRA Tier 4 (2% COLA)	8.81%	2.01%	10.82%
Cost Group #1 – PEPRA Tier 4 (3% COLA)	9.07%	3.04%	12.11%
Cost Group #2 – PEPRA Tier 5 (2% COLA)	8.21%	1.85%	10.06%
Cost Group #2 – PEPRA Tier 5 (3%/4% COLA)	8.38%	2.77%	11.15%
Cost Group #3 – PEPRA Tier 4 (3% COLA)	8.41%	2.89%	11.30%
Cost Group #4 – PEPRA Tier 4 (3% COLA)	8.86%	2.99%	11.85%
Cost Group #5 – PEPRA Tier 4 (2% COLA)	10.25%	2.29%	12.54%
Cost Group #5 – PEPRA Tier 4 (3% COLA)	11.09%	3.71%	14.80%
Cost Group #6 – PEPRA Tier 4 (3% COLA)	9.87%	3.32%	13.19%

Safety Tiers	Basic	COLA	Total
Cost Group #7 – PEPRA Tier D	14.12%	5.67%	19.79%
Cost Group #8 – PEPRA Tier D	12.12%	5.00%	17.12%
Cost Group #8 – PEPRA Tier E	12.01%	3.30%	15.31%
Cost Group #9 – PEPRA Tier E	13.26%	3.58%	16.84%
Cost Group #10 – PEPRA Tier D	12.29%	5.08%	17.37%
Cost Group #11 – PEPRA Tier D	11.27%	4.64%	15.91%
Cost Group #12 – PEPRA Tier D	11.62%	4.80%	16.42%
Cost Group #13 – PEPRA Tier D	12.74%	5.23%	17.97%

Administrative Expense: 0.49% of payroll added to Basic Rates

¹ All rates should be applied to all compensation (whether or not in Social Security) up to the applicable annual Gov. Code 7522.10(d) compensation limit.

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

SUBVENTION

All rates are shown as a percent of payroll.

Employee contribution rates vary depending upon their tier and age at entry. To compute the exact subvention percent for each employee, do the following:

Employee rate: Decrease the employee's rate by the subvention percent (i.e. 25%, 50%, etc.).

Employer rate: Increase the employer's rate by a percent of the employee's decrease using the applicable refundability factor (found on Exhibits 1 through 13).

EXAMPLE FOR COST GROUP #3 LEGACY MEMBERS:

If the subvention percent is 25%, and the employee's rate is 6.00%,

Employee rates should be decreased by 1.50% ($25\% \times 6.00\%$)

Employer rate should be increased by 1.44% ($1.50\% \times 0.9624$)

Please note that for PEPPRA members, subvention is generally not permitted. The standard under Gov. Code §7522.30(a) is that employees pay at least 50 percent of normal costs and that employers not pay any of the required employee contribution, but there are some exceptions. Gov. Code §7522.30(f) allows the terms (regarding the employee's required contribution) of a contract, including a memorandum of understanding, that is in effect on January 1, 2013, to continue through the length of a contract. This means that it is possible that an employer will subvent a portion of a PEPPRA member's required contribution until the expiration date of the current contract, so long as it has been determined that the contract has been impaired.

CAUTION – these rates are for employer subvention of up to one-half the member contribution under Gov. Code §31581.1, NOT employer pick-up of employee contribution rates. When an employer subvents, the contribution subvented is not placed in the member's account and is therefore not available to the member as a refund. For this reason, the employer pays the contribution at a discount (i.e. "Refundability Factor").

Employer pick-ups of employee contributions are those made under Gov. Code §31581.2 and Internal Revenue Code §414 (h)(2) for the sole purpose of deferring income tax. These contributions are added to the member's account, are available to the member as a refund and are considered by CCCERA as part of the member's compensation for retirement purposes.

EMPLOYEE PAYMENT OF EMPLOYER COST

There are several reasons why the attached contribution rates may need to be adjusted to increase the employee portion including the following:

Gov. Code §31631 allows for members to pay all or part of the employer contributions.

Gov. Code §31639.95 allows for Safety members to pay a portion of the employer cost for the "3% at 50" enhanced benefit.

Gov. Code §7522.30(c) requires that an employee's contribution rate be at least equal to that of similarly situated employees.

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

Gov. Code §7522.30(e) allows the employee contributions to be more than one-half of the normal cost rate if the increase has been agreed to through the collective bargaining process.

If you need to increase the employee contribution rate for any reason, you will need to adjust both employee and employer rates as follows:

Employee rate: Increase the employee's rate by the desired percent of payroll.

Employer rate: Decrease the employer's rate by a percent of the cost-sharing percent of payroll using the applicable refundability factor.

EXAMPLE FOR COST GROUP #11 LEGACY MEMBERS:

If the required increase in the employee rate is 8.00%,

Employee rates should be increased by 8.00%.

Employer rate should be decreased by 7.76% ($8.00\% \times 0.9697$)

PREPAYMENT DISCOUNT FACTOR FOR 2022-23

Employer Contribution Prepayment Program & Discount Factor for 2022-23 is **0.9696**

If you are currently participating in the prepayment program and wish to continue, you do not need to do anything other than prepay the July 1, 2022 through June 30, 2023 contributions on or before July 31, 2022. If you wish to start participating, please contact the Accounting Department at CCCERA by March 31, 2022.

The discount factor is calculated assuming the prepayment will be received on July 31 in accordance with Gov. Code §31582(b) in lieu of 12 equal payments due at the end of each month in accordance with Gov. Code §31582(a). The discount factor for the fiscal year July 1, 2022 through June 30, 2023 will be **0.9696** based on the interest assumption of 7.00% per annum. It is calculated by discounting each of the 12 equal payments back to the date that the prepayment is made and is the sum of the discount factors shown in the table below divided by 12. Each of the discount factors below is based on how many months early the payment is made.

Payment Number	Number of Months	
	Payment is Made Early	Discount Factor
1	0	1.0000
2	1	0.9944
3	2	0.9888
4	3	0.9832
5	4	0.9777
6	5	0.9722
7	6	0.9667
8	7	0.9613
9	8	0.9559
10	9	0.9505
11	10	0.9452
12	11	0.9399
Sum of Discount Factors Divided by 12:		0.9696



Meeting Date
08/11/2021
Agenda Item
#8

MEMORANDUM

Date: August 11, 2021
To: CCCERA Board of Retirement
From: Gail Strohl, Chief Executive Officer
Subject: Consider and take possible action to adopt the December 31, 2020 Valuation Report and Contribution Rates for the period July 1, 2022—June 30, 2023.

Background

Segal Consulting has prepared the December 31, 2020 valuation report. The employer and member contribution rates shown in this report are effective July 1, 2022 to June 30, 2023.

Recommendation

Consider and take possible action to adopt the December 31, 2020 Valuation Report and Contribution Rates for the period July 1, 2022—June 30, 2023.

Meeting Date
08/11/2021
Agenda Item
#9a.



Webinars/Symposiums

The Association's series of webinars and symposiums demonstrates our commitment to ongoing member education and professional development. These interactive forums allow our diverse membership base to learn and collaborate, while providing a platform for comprehensive analysis of the most significant developments affecting our industry.

SACRS SPOTLIGHT SERIES - SONOMA CERA & TULARE CERA

Thursday, August 12 - 9:30 am - 10:45 am (PST)

The SACRS Spotlight Series will provide educational, one-on-one conversations with participating SACRS' Plans - Sonoma CER and Tulare CERA. Get to know the people responsible for overseeing and managing the investment funds. These in-depth conversations will explore everything from how they are organized, their culture, how they work with the consultants and managers as well as what is on the horizon for their asset allocation and future investment opportunities. Join us and learn more about Sonoma CERA and Tulare CERA. *(Zoom link will be sent to all registered attendees Wednesday August 11 COB)*

Speakers: Julie Wyne, CEO, Sonoma CERA; Jim Failor, CIO, Sonoma CERA; Leanne Malison, CEO, Tulare CERA

Moderators: Scott Draper, Partner, Algert Global LLC and Brad Williams, Calton & Associates

[REGISTER](#)

WHAT IS REALLY HAPPENING ON THE GROUND IN THE MAJOR REAL ESTATE MARKETS?

Tuesday, August 24 - 9:30 am - 10:30 am (PST)

Max, Jackson and Josh will discuss current demand for property, occupancy rates, rents and income and their impact on valuations - current and future. *(Zoom link will be sent to all registered attendees Monday August 23 COB)*

Speakers: Jackson Lapin, Head of residential Asset Management/US, Invesco; Josh Siegel, Senior Acquisition Lead Focused on Commercial Office, Life Science, Logistics & Retail, Invesco

Moderator: Max Swango, Global Head of Client Portfolio Management, Invesco

[REGISTER](#)

THANK YOU FOR PARTICIPATING IN SACRS SUMMER WEBINAR SERIES. TO RECEIVE CREDIT FOR YOUR PARTICIPATION, PLEASE SEE THE INSTRUCTIONS BELOW.

CONTINUING EDUCATION CREDIT

To access your certificate of completion:

- Login to your SACRS account
- Click on "My Account"
- Click on "My Continuing Education"
- Click "Print Certificate" next to one of the sessions you attended

You do not need to print a certificate for each session you attended, by clicking "Print Certificate" next to one of the sessions you evaluated, the website will generate a certificate with the total number of CE credits earned.

Trustees Masters Program

Saturday, October 16 - Sunday, October 17, 2021
The Colorado Convention Center, Denver, CO

REGISTER

PROGRAM DETAILS

HOTEL/TRAVEL

IFEBP > Education > Certificate Programs > Trustees Masters Program (TMP)

The Trustees Masters Program (TMP) is for advanced-level trustees who want to gain a deeper insight into their role as well as interact with peers.

The program is divided into two tiers to help further facilitate your ongoing education and recognition. Tiers one and two are required for course completion and to receive your TMP pin.

Topics/Agenda

Speakers tailor the discussions of the following topics to the needs and concerns of the registrants by using feedback from a survey.

- Establishing Goals and Objectives
- Using Fund Professionals Wisely
- Attributes of a Master Trustee
- Best Practices from Trustees and Professionals
- Enhancing Investment Performance
- Case Studies
- Future Challenges

Benefits of Attending

- Gain deeper insights into the role of a trustee.
- Interact with peers and share what you have learned and takeaways from your own experiences
- Obtain concrete ideas for tackling specific issues
- Attain proven practices that work
- Earn special recognition for your knowledge and participation with a TMP certificate and pin.
- Participate in exclusive TMP graduate sessions offered at each Annual Conference.

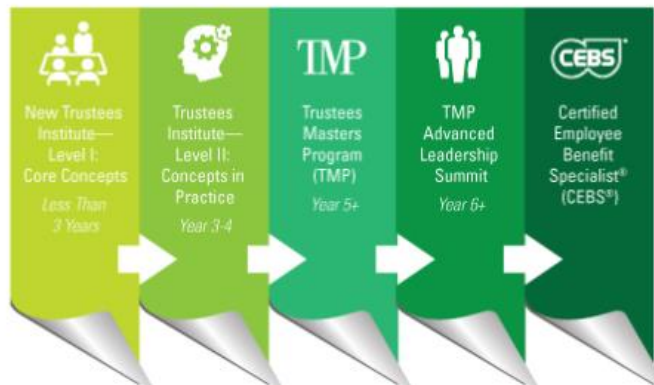
Who Should Attend

The Trustees Masters Program is open to experienced trustees who have five or more years of experience and have attended at least two International Foundation conferences.

Multiemployer Trustee Education Path

In order to help trustees better meet their educational needs, the Foundation has created a suggested progression of trustee education. This program is the first step in the [trustee education path](#).

U.S. Multiemployer Trustee Education Path



Trustee Resource Center

Look to the [Trustee Resource Center](#) as you serve in this influential role as a trustee! You'll receive guidance on legal and regulatory issues, investment management, financial reporting, retirement plans, defined benefit pension plans and health plans; visit www.ifebp.org/trusteeresourcecenter.

Continuing Education

Programs sponsored by the International Foundation of Employee Benefit Plans are consistently accepted for credit by agencies governing continuing education for license renewal and professional recertification.

For additional information, visit our [continuing education \(CE\)](#) web page or contact us by phone at (262) 786-6710, option 2.



Educational sessions at this program can qualify for CEBS Compliance credit. Visit www.cebs.org/compliance for additional information.

COVID-19 Preparations

The International Foundation is closely monitoring local, state and federal agencies regarding the latest safety precautions. We are also working closely with the event property to implement the current safety guidelines. As the event draws closer, watch for safety guidelines that will be in place.

Register With Confidence

We can't wait to see you. Our mission is to create the best learning environment for you, and that includes ensuring a safe learning environment following the latest health guidelines. If, as the event draws near, we determine that we are unable to meet in person, we will let you know of alternative educational options.

All conferences have a no-penalty transfer policy to any 2021 or 2022 program. Hotel cancellation policies apply. See www.ifebp.org/policies.

Registration Information

Register early and save!

	Member	Nonmember
Through 9/7/2021	US \$1,550.00	US \$1,770.00
After 9/7/2021	US \$1,850.00	US \$2,070.00

Register

8th Annual California Institutional Forum

Annual Event for the Regional Institutional Investor Community Held on December 17, 2021,
The Meritage Resort and Spa, 875 Bordeaux Way, Napa, CA 94558

Designed For:

Pensions, Endowments, Foundations, Hospital Plans, Insurance Companies & Investment Consultants

The forum provides insight into selected areas of interest within the California institutional investment community.

Series Speakers Include:

Betty Yee, *State Controller, California*
David Hunter, *Chief Investment Officer, North Dakota Retirement and Investment Office*
Gary Dokes, *Chief Investment Officer, Arizona Community Foundation*
Jake Abbott, *Investment Officer, San Bernardino County Employees' Retirement Association*
Jonathan Shear, *Chief Investment Officer, University of Utah*
Elmer H. Huh, *Chief Investment Officer, M.J. Murdock Charitable Trust*
Sean Bill, *Chief Investment Officer, Santa Clara Valley Transportation Authority*
Ralph Goldsticker, *Chief Investment Officer, Alan Biller & Associates*
Robert Shaw, *Chief Investment Officer, City and County of San Francisco Office of the Treasurer*
Ronald Lagnado, *Investment Director, The California Public Employees' Retirement System*
Mary Morris, *Investment Officer, California State Teachers' Retirement System*
Kurt Braitberg, *Managing Director, Public Markets, San Francisco Employees' Retirement System*
David Wong, *Director of Investments, San Manuel Band of Mission Indians*
Damien Charléty, *Investment Officer, East Bay Municipal Utility District Employees' Retirement System*
Tim Barron, *Chief Investment Officer, Segal Marco*
John Meier, *Managing Director, Senior Consultant, Verus*
Stephen Marshall, *Director, Head of Asset Allocation, Beacon Point Advisors*
Stacy Lewis Daher, *Assoc. Vice President, Finance & Treasury, University of San Francisco*
William Beck, *Vice President, Fixed Income Manager Research, Wilshire Associates*
Austin Head-Jones, *Manager Research Consultant, Alternative Credit and Real Estate Debt, RVK, Inc.*

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Voya Investment Management | Putnam Investments

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HSBC Global Asset Management | Eaton Vance | ArrowMark Partners | State Street Global Advisors
JP Morgan Global Asset Management | Capital Fund Management | Fisher Investments | IFM Investors

7:30 Registration & Welcome Coffee**8:00 Breakfast Workshop: Macro outlook for a post-pandemic world**

We are in unprecedented times where the markets are challenged by inflation, low interest rates, and extended equity valuations. How can allocators position their portfolios for positive bond/equity correlations, significant monetary and fiscal stimulus, a commodities super-cycle driven by de-carbonization and a structural shift in employment brought on by the pandemic. This presentation will review how they are taking action and their thoughts on macro strategies in current economic conditions and uncertain markets ahead.

Presenter:

Adam Rej, *Head of Marco Research, Capital Fund Management*

8:30 Welcome Remarks

Organizer: **William Cobra**, *Head of Investor Relations, North America Institutional, Markets Group*

Chairperson: **Speaker**, *Managing Director, Allianz Global Investors*

8:30 Panel: Fixed Income: Why It Still Matters

For a global asset class totaling more than \$100 trillion, fixed income is a capital market asset class which is often disrespected. The historic equity market surge of 2010-2019 overshadowed solid bond performance. But, the onset of COVID-19 and subsequent panic-stricken selloff demonstrated the safe-haven attributes of high quality, investment grade fixed income, and offered exceptional opportunistic merchandise in dislocated corporate credit, structured credit, and even exchange traded fixed income. Our panel will discuss how the fixed income market is fairing in this brave new world of Fed dominated investing, with fears of rising inflation, and will opine on why fixed income still matters.

Moderator:

Panelist:

Speaker, *Managing Director, Putnam Investments*

9:10 Keynote Presentation: Understanding the Chinese Markets

The opening of the China A-shares market to foreign investors is expected to transform global markets and how investors look at Emerging Markets allocations. While the market is large -it is roughly equivalent in size to the European equity market- and offers access to high growth "new economy" sectors, risks still remain, especially for those not familiar with investing in China. Allianz Global Investors CEO Doug Eu began managing China equities in the early 1990s and built a strong Asia business in the following decade. He offers insight on the past and present Chinese equity markets, the unique role of the Chinese government, and other considerations investors in the A-share market should understand in order to best capture this new market opportunity.

Presenter:

Speaker, *Managing Director, Allianz Global Advisors*

9:40 Why Farmland Now: A Durable Store of Value and Return through Market Cycles

Farmland is gaining more mainstream acceptance as an institutional asset class, potentially providing attractive long-term annualized returns that are uncorrelated to traditional financial products such as fixed income and equities, and low correlation to other real assets. In this session, we will assess the macroeconomic forces and demographic trends that underpin the value proposition of direct equity investment in global farmland and explore how active management and embedding sustainability throughout the investment lifecycle can further increase value.

Moderator:

Panelists:

10:20 Morning Coffee Break

10:40: Panel: Global Equity: Picking a Stock After COVID-19

The decade following the global financial crisis capped not just the longest-running—but the most remarkable—bull market ever recorded. Between 2009 to 2019, the Dow Jones Industrial Average reached 28,000, Netflix posted a 4,000 percent return and—in a historic first—the U.S. ended a decade without entering economic recession. Though a market correction or bearish reversal could be priced-in, the novel coronavirus outbreak has proven to be a global risk multiplier without precedent. Our equity panel will measure the true cost of the 2020 stock market crash and ask if COVID-19 reduced the indexing revolution to another too-big-to-fail enterprise.

Moderator:

Panelists:

Speaker, Managing Director, Nikko Investment Management

11:20 Panel: ESG in Practice for Long Term Investors

The ESG discussion is evolving rapidly, as are techniques for incorporating ESG analytics and factors into the portfolio construction process. This panel will explore how investors are assessing ESG's longer-term material impacts and how they are positioning their portfolios to avoid these potential risks. The panel will also examine specific strategies investors are using to address and integrate ESG issues in systematic value and multi-factor-based frameworks.

Moderator:

Daniel Ingram, Vice President, Wilshire Associates

Panelists:

Speaker, Managing Director, Vontobel Asset Management

12:00 Panel: Fixed Income: Why it still matters

For a global asset class totaling more than \$100 trillion, fixed income is a capital market asset class which is often disrespected. The historic equity market surge of 2010-2019 overshadowed solid bond performance. But, the onset of COVID-19 and subsequent panic-stricken selloff demonstrated the safe-haven attributes of high quality, investment grade fixed income, and offered exceptional opportunistic merchandise in dislocated corporate credit, structured credit, and even exchange traded fixed income. Our panel will discuss how the fixed income market is fairing in this brave new world of Fed dominated investing, with fears of rising inflation, and will opine on why fixed income still matters.

Moderator:

Panelists:

Speaker, Managing Director, Voya Investment Management

12:40 Networking Luncheon Hosted By: Fisher Investments

In the format of roundtables, small discussion groups are formed by topic. This is your opportunity to interact with some of our star speakers of the day, ask questions, and make connections.

Table 1: Understanding the Chinese Markets – hosted by **Allianz Global Investors**

Table 2: Systematic Investing – hosted by **Capital Fund Management**

Table 3: Macro Outlook and Global Asset Allocation – hosted by **Putnam Investments**

Table 4: Agribusiness Investing: Exploring Developed and Emerging Markets, Across the Food Value Chain and Capital Structure – hosted by **Nuveen**

Table 5: Investing in Today's Global Equity Markets – hosted by **Nikko Investment Management**

Table 6: ESG Now and Then: Recent Trends in Implementation – hosted by **Vontobel Asset Management**

Table 7: Fixed Income – Opportunity in Multi-Sector Credit Strategies – hosted by **Voya Investment Management**

Table 8: Investing in Asia – hosted by **HSBC Global Asset Management**

Table 9: Emerging Markets: Relevancy and Value in Today's Markets? – hosted by **Eaton Vance**

Table 10: Private Credit in the Late Stage of the Credit Cycle – hosted by **ArrowMark Partners**

Table 11: Alpha, Absolute and Risk-Adjusted Return

1:40 Hedge Fund Panel: Alpha, Absolute and Risk-Adjusted Return

Loss and liquidation are the new hedge fund normal in 2020, with even Bridgewater falling victim to the novel coronavirus outbreak. Though the lore of alpha—not to mention the axiom of generating net-of-fee positive return no matter the market—was debunked prior to the stock market crash, the rationale for favoring factor-tilt over manager skill is undergoing a moment of reckoning. If basis trading, quantitative modeling and risk premia are posting negative performance with the onset of COVID-19, then is factor specific or weighted exposure using volatile replication working? Our panel will evaluate alternative beta, smart beta, and hedge fund alpha in a live multiple-factor environment.

Moderator:

Panelists:

2:20 Panel: Infrastructure

Moderator:

Panelists:

Speaker, Managing Director, HSBC Global Asset Management

3:00 Panel: Evolution of the Emerging Market after COVID -19

Before the novel coronavirus could spread to the developing world, the historic March 15 3,000-point loss on the Dow Jones Industrial Average had started a domino effect in Argentina, Brazil, India and South Africa, initiating a financial crisis in each nation to compound the impending humanitarian disaster. For America, the risk of losing not just a diverse asset class—half of all revenue reflected in the S&P 500 Index is earned in Asia and Latin America—but a pillar of globalization is real.

Moderator:

Panelists:

Speaker, Managing Director, Eaton Vance

3:40 Afternoon Coffee Break**4:10 Panel: Opportunities in Alternative and Structured Credit**

As investors search for new and differentiated alternative strategies that align with their portfolio objectives, many have explored specialized segments of the credit markets to capture yield. Often, these strategies look to take advantage of less trafficked, more complex, and sometimes less-liquid opportunities. A number of challenges exist: fit within a broader portfolio, unique supply and demand dynamics across segments, vehicle structure, and concerns about the credit cycle top the list. The panelists will seek to address these points across various alternative and structured credit opportunities. Their discussion will touch on real-time examples of opportunities in today's market.

Moderator:

Timothy Beresford, Client Portfolio Manager, ArrowMark Partners

Panelists:

4:50 Chief Investment Officer Roundtable

The novel coronavirus outbreak expunged \$100 billion in corporate pension funding in 2020, while the value of the U.S. public pension system fell \$1 trillion. Saving, investing and funding retirement have long been under threat, COVID-19 has brought our fear about exactly what the future might hold into sharp focus. For our closing asset liability management session, talk is cheap, and failure to act is lethal.

Moderator:

Speaker, Managing Director, JP Morgan Global Asset Management

Panelists:

5:30 Closing Remarks

Chair: Speaker, Managing Director, Allianz Global Investors

5:35 Networking Cocktail Hosted By: IFM Investors

6:30 Invitation-Only Dinner